GRUMMAN plane news

Vol. 32, No. 7, Bethpage, N. Y., April 13, 1973

Avionics' New Quarters

Photos by Dick Sander

The WSO: the Essential Partner in Modern Aircraft

The days of dogfights, when daredevil pilots in simple but rugged machines dueled in close-in combat, are now captured only on old films. Which is not to say that dogfights are passe; they're not. But —

One *but* is speed of a modern aircraft. Another *but* is the plane's complexity. And in simple terms, perhaps the greatest change is a reflection of what it's called: what once was a *plane* is now commonly termed (in the military) a *weapon system.*

What that means for Grumman aircraft—F-14, A-6E, EA-6B, E-2C — is that the pilot is not flying alone. His company is at least one highly trained Weapon Systems Operator (WSO), in the case of an F-14 or an A-6. With the EA-6B, three additional men are present. In other words, the pilot today is one part of a team—a very closely knit team. In fact, Navy practice is to have the same flight crew fly together because, over a period of time, one gets to know the other's way of doing things. That type of "learned communication" can be very valuable, especially in emergencies.

"Besides that," says Chief Test Pilot Chuck Sewell, "a pilot isn't able to fly a mission by himself. The pilot and the WSO are equal partners."

That's confirmed by Roger Ferguson, who's chief of WSOs and F-14 Project WSO. "In test flying here at Calverton, or at Point Mugu, it has to be a team effort," Ferguson says. "At Calverton, too, you can build a case that there's a vital third link, the Automated Telemetry Station, for it's a three-way conversation or communications loop. So everything that occurs during a flight is communicated to and from all planes flying a particular mission, including chase planes, and the ATS ground station. The entire flight is monitored in 'real time' and recorded by ATS."

But that record—necessary though it is—is less important in this story than how the record is compiled. Says Ferguson:

WSOs responsibilities

"The overall responsibilities of the WSOs are roughly the same, regardless of the weapon system being flown. The WSO assists the pilot to accumulate test data throughout the flight envelope of the aircraft. He records data, operates test equipment, and coordinates ATS communications. His specific duties, of course, depend on the type of test flight being run, for example, aerodynamic, flutter, structures, etc. While the pilot maneuvers the aircraft through test points, the WSO operates test equipment necessary to evaluate areas such as aircraft structures, engine performance, speed envelope, weapons systems, and so on.

Pete Beresford, EA-6B project WSO, sees things in a different light because three WSOs fly in the EA-6B Prowler in addition to the pilot. (The exception is that, during test flights, the fourth seat is crammed with instrumentation, including a closed loop TV circuit so that the cognizant engineer sees and hears what's going on during the flight, a spectrum analyzer to view the broad-band frequency environment, an oscilloscope to view and measure circuits, audio recorders, digital recorders, and more.) Beresford says that "This ECM (Electronic Counter-Measures) weapons system is as sophisticated an aircraft as there is in the world."

"We have a 'bible' on it, a NATOPS (Naval Air Training and Operating Procedures Standardization) manual that spells things out in detail, and we have to know it and follow it."

Being a tight team is a bit tougher if only because four (instead of two) men are involved. There's another running complication—or challenge: enhancement must be constant. ECM work quickly turns into ECCM (Electronic Counter-Counter-Measures), then to ECCCM and so on. "You have to be at least one step ahead of the enemy all the time. If we're jamming him he's going to counter by wiping out our jamming (if he can), so by the time he's zeroed in on us he finds we're jamming him in a new way. There isn't any let-up," says Beresford.

In a combat situation, Beresford explains, one equipment operator in the Prowler sits next to the pilot. The operator and the man behind him operate the equipment that finds and jams enemy radar. The third WSO concentrates on finding and jamming the enemy's voice communications, thereby neutralizing enemy aircraft.

Prowler mission

What all this boils down to for a Prowler mission can be put simply: the pilot is responsible for the safety of the aircraft and its crew and the Command ECMO (Electronic Counter-Measures Officer) is responsible for the conduct of the mission.

That's similar to the arrangement on the A-6E, where Jim Johnson is the Project WSO (or BN: Bombardier/Navigator). "The A-6 Intruder is really a self-contained weapon system: we carry the weapons, detect the targets, and attack—and illuminate the target after a firing to assess damage. It's a full-time job for the WSO, who performs the navigation and attack job; and it's a full-time job for the pilot."

Johnson also emphasizes that teamwork is the heart of mission success—and that continuing updating of weapon systems capability is a must. He says that "The A-6A was a great plane, the only one that I know of that was truly an all-weather aircraft, and it's

(Continued on page 16)

Grumman, Rockwell to begin talks on Orbiter

All last week, 10 representatives of Rockwell International Corporation held in-depth discussions with a Grumman team in order to probe in detail various facets of the Company's proposal to design, manufacture, and test the wing of the Space Shuttle Orbiter.

Grumman received notice of the $40 million contract on March 29 from Rockwell International, prime contractor for NASA on the Orbiter.

Shuttle Program Manager Don Markarian said "the discussions were most successful. We'll begin negotiations before the end of this month."

In the near future, Markarian indicated, some 50 to 75 Grummanites are to work on the preliminary design of the wing at Rockwell's Downey, California, facility. That, of course, will be after the negotiations. There will be about 20 Grummanites to support that effort at Bethpage.

"The Phase I-Preliminary Design Phase will go on for approximately six months," says Markarian, "and then we'll be lookinq forward to the production design and fabrication of wing units here at Bethpage in the fall of this year. And we are also hopeful of receiving additional Shuttle work over and above the wing."

H. E. Moore and S. Craig of procurement and sub-contract management and C. Butler of project management headed the Rockwell team that visited Grumman.

The Orbiter wing that Grumman is to develop will have a "double delta" design — an initial 75-degree sweep from the fuselage and then a 45-degree sweep leading to the tip. The wing will be made in two panels having a total of approximately 2,100 square feet of surface and a combined weight of about 14,000 pounds. Each wing panel will measure some 34 feet from tip to fuselage and will be about 62 feet wide where it meets the fuselage.

Annual meeting scheduled for May 17

The annual meeting of Grumman shareholders has been scheduled for 2 p.m. on May 17 in Hangar 3, Plant 4, Grumman Corporate Secretary Larry Rockwell announced.

On or shortly after April 13, Bankers Trust Company—trustee for the Grumman Employee Investment Plan—will mail to members of the Plan proxy statements and confidential cards for voting at the annual meeting. Employees are asked to return the completed cards by May 10 to Bankers Trust Company in the self-addressed, postage-paid envelopes that will accompany them.

The annual meeting is often the only opportunity visiting shareholders have of seeing the Company's products. Because Grumman stock obtained through the Investment Plan is held in trust for each individual member, membership in the Plan does not automatically entitle participants to attend the annual meeting. Only those persons owning stock of record—that is, stock purchased outside the Investment Plan before the record date of March 30—are eligible to attend.

Grumman personnel who own Company stock and have received a proxy card in the mail may preregister at any Employee Service Office on any working day before May 17. If you have mailed in your proxy card and intend to be present at the meeting, you should advise your nearest ESO so that you will be issued a badge for admittance to the meeting.

Because of limited space, shareholders are requested to refrain from inviting their wives, children, or friends to the meeting.

Maryland official lauds Grumman for 'beginning to get things done'

In the March 24 issue of *Baltimore Afro American*, Maryland Congressman Parren J. Mitchell commends Grumman as "an excellent illustration of 'beginning to get things done'."

In 1969, Congressman Mitchell says, Grumman implemented a plan to introduce minority business into its subcontracting program. By 1971, 80 minority firms had been located and over $200,000 worth of business had been placed. The minority business source listing has now been expanded to 150 minority firms and orders placed to date with some of these firms exceed $445,000.

In addition to its small business endeavors, the Company has also aided minority groups. It has:

- Expanded minority group summer hires (50 minorities in 1972 out of 200 placements);
- Given support to the black-owned Vanguard National Bank in the amount of a $100,000 charter deposit;
- Contributed services for a new minority Business Enterprise — Barnai Information System;
- Utilized the services of six minority subcontractors with total funds involved this year of $244,000.

Jack Buxton

Tom Kelly

Two Grumman vice presidents are recipients of NASA awards

Grumman Aerospace Vice Presidents Tom Kelly and Jack Buxton were recently cited by the National Aeronautics and Space Administration for their contributions to the Apollo program. Tom Kelly received NASA's Distinguished Public Service Medal at the Apollo Awards Ceremony held in Washington, D.C., on April 4. Jack Buxton, who is based in Houston and is regional director of Grumman operations in that area, received NASA's Public Service Award at the Johnson Space Center in Houston on April 6.

Tom Kelly, presently director of Space Programs, has been involved in the Apollo Lunar Module (LM) Program at Grumman since its inception in 1960. He has been called "the father of the LM" for his contributions to its concepts and design. His enthusiasm for the concept of lunar orbit rendezvous helped to shape the plans for the Apollo missions in the early '60s.

Following the award of the LM contract to Grumman, Kelly served in a variety of capacities including project engineer, engineering manager, vehicle test manager, and assistant program director - engineering, assuming responsibility for all spacecraft engineering activity on the LM, in other words, from "drawing board to the moon."

His latest recognition for his work on Apollo joins a long list of past acknowledgements. Kelly was the first recipient of the Cornell University Engineering Award. (He attended Cornell on a Grumman Scholarship). In 1969 he received the NASA Certificate of Appreciation, and numerous commendations from federal, state, municipal, and professional organizations for his achievements on the Apollo program.

Jack Buxton has spent most of his 32 years with the Company away from Bethpage. Most of his service has been in direct contact with the customer, first as a Field Service rep with the Navy and the Marines, and now in NASA. Early in 1962, while Grumman was making its bid to build the Lunar Module, Buxton was assigned to the Manned Spacecraft Center at Houston.

With Buxton as manager, then director, the Houston operation grew from a one-man office to an organization of more than 400 engineers and technicians. Perhaps the high note of the era, for Buxton and the space program, was the first manned thermal vacuum test of LTA 8 (Lunar Module Test Article) a vital step along the way to the first manned landing on the moon.

Some who don't forget . . .

If you think that retirement also means the end of concern and involvement with Grumman—well, you've got another think coming. Recently we made a periodic check of our mailing list to make sure those on it still wanted to receive Plane News. The retirees returned their cards in a hurry with all sorts of comments. Many said they weren't getting Plane News fast enough. Sorry about that! That's being improved, we think...

But there were other comments that typify, in a way, the concern that most retirees feel about the Company and those who now carry on their work. "Kindly keep sending Plane News," said one gent who called himself Tip Tank Charlie. "It is as a tonic of days of yore. Oh to be back in the old groove. . . . But remembrances are the essences. To do justice to the best company ever, and all those years well spent, while active, by giving a fair day in return. Put that in your Plane News pipe and smoke it. A happy feller . . . ".

And another: "Of course I want the Grumman Plane News. What else ties me in with the real honest to goodness past. . . . Leroy—Jake—Bill—Clint—Joe—and dear old Poor. . . ."

And, speaking for those of us now at Grumman, thank you all.

PREPPING THE E-2C FOR ITS MOST CRUCIAL EVALUATION

Photos by Fred Annette

Work days are longer and weekends are shorter for many people in Plant 4 these days. There is occasional talk of yard work that isn't getting done or boats lying idle or vacations that some families might have to forego this summer. But the highly charged atmosphere at the Bethpage facility is not one of fear, resentment or frustration. There's a kind of clenched-fist determination, mixed with a tireless drive to get things done well, on time, and ready to participate in an arena in which second-best is totally unacceptable.

Reason: after two-and-a-half years in the development stage, the E-2C—the current version of the Grumman Hawkeye series of airborne early warning aircraft—is being readied for Bureau of Inspection and Survey (BIS) trials to begin this month and continue through August at the Naval Air Test Center, Patuxent River, Md. The trials will constitute the first tests of this aircraft in a Navy environment.

"It's the real moment of truth for all of us," says Tom Guarino, E-2C program director. "BIS trials are the Navy's assessment of the aircraft's total weapons system package prior to its introduction to the fleet. It's another major milestone which we've been working toward since the E-2C started its first flight tests in 1971."

What's so unusual about BIS trials? "Sure, every military aircraft eventually goes to BIS trials," Guarino says, "but these trials are especially significant for the E-2C for three primary reasons:

"First, the E-2C has about 10,000 pounds of avionics equipment—nearly five times more than that carried on the A6E, for example—which makes it the most densely packed electronics article Grumman ever made;

"Second, the BIS schedule hinges on our maintaining a one-month, ahead-of-production-schedule posture. This way, we have time to test and debug each plane before it goes to BIS;

"And third, the final BIS grades will have an important affect on the aircraft's future and the Navy's subsequent requirements for additional planes of this variety."

Advantages for Navy

For the Navy, the Hawkeye offers a number of advantages. It is a high-wing, twin turbo-prop aircraft easily identifiable by its rotodome and four vertical tails. It is an all-weather, carrier-and-shore-based system whose primary mission is to defend the fleet. Its secondary missions include such things as surface surveillance, strike control, search and rescue, air traffic control, and communications relay. It operates in conjunction with surface tactical data systems, in company with other E-2s, or independently.

"Four E-2Cs will participate in the BIS trials," says Jim Philbin, assistant to the E-2C program director, and who will head the E-2C BIS suport team for Grumman. "One, which is designated M-2, is a development plane specially equipped with instrumentation; the others, designated A-1, A-2 and A-4, are actual production planes. At the peak of the BIS trials, Grumman will have a 100-man support team on hand, primarily from engineering, product manufacturing, flight test, product support, and quality control. Operations are scheduled for six days every week during the trials period. We will make approximately 150 flights, about 105 of which will be avionics weapons systems evaluations. It's a tough job, but we have a dedicated team to see it through to a successful conclusion."

Getting ready for BIS is a major undertaking in itself. Key to the prep-period is, of course, the people behind the scenes. "Much of this effort actually centers around four key individuals," says Guarino. "Bob Papaleo, of program management, who is responsible for getting the production planes built, tested and flown for BIS; Jerry Norton, who is getting things done with the E-2C development planes, the M-1 and the M-2; Dick Anderson, who is the chief problemsolver in E-2C technical matters; and Harvey Fromer who manages subcontractor equipments."

Guarino is quick to add that just about everyone associated with the E-2C program has a crucial role. For example, most of the "flight BIS prep" effort is being done in Plants 14 and 15 where basic engineering work is done, and in Plant 4 where the aircraft are actually assembled and tested. In addition to the avionics gear, subassemblies for the E-2C are produced at various Grumman facilities including Plant 36 in Garden City, Plant 3 in Bethpage, Plant 27 in Wyandanch and Plant 77 in Stuart, Fla. All the various subassemblies are then brought into Plant 4 at Bethpage for final assembly and weapon system integration, testing, acceptance and ultimate delivery to the Navy. In addition, Grumman flight tests each aircraft to insure that its performance meets all expectations, then puts it through the paces of simulated BIS exercises. When each E-2C is delivered for the BIS trials, it will be an "operationally representative aircraft."

"The on-time delivery of the E-2C BIS aircraft rests heavily on the shoulders of all Plant 4 product manufacturing personnel," says Philbin. "Art Riehl, for example, is the E-2C BIS product manufacturing leader who will supervise 50 or 60 people during the trials. In flight test, there's Don Fish, flight test manager, and Larry Michelon, assistant flight test manager. All told, these people—ranging from inspection, plane captains, avionics technicians, electricians and wiremen, hydraulics and instrumentation — are typical of the many dedicated E-2C people without whose tireless effort we

could not meet our BIS objectives."

Under the demanding BIS prep schedule, things rarely slow down. In Plant 4, at least, Ken Koehler, assistant to the program director, attributes this to team work. "We're working with a complete weapons system," he says, "not merely a single component or unit. In the manufacturing sense, all work such as wiring, hydraulics, and electronics must be done inside the airframe which makes the E-2C somewhat unique from other aircraft. All of the systems are integrated and the interplay between the aircraft's different systems is very great and extremely complex. Therefore, to keep manufacturing and buildup of the aircraft flowing smoothly, it is essential that everyone involved in manufacturing have an understanding of what everyone else is doing."

Well-established teams

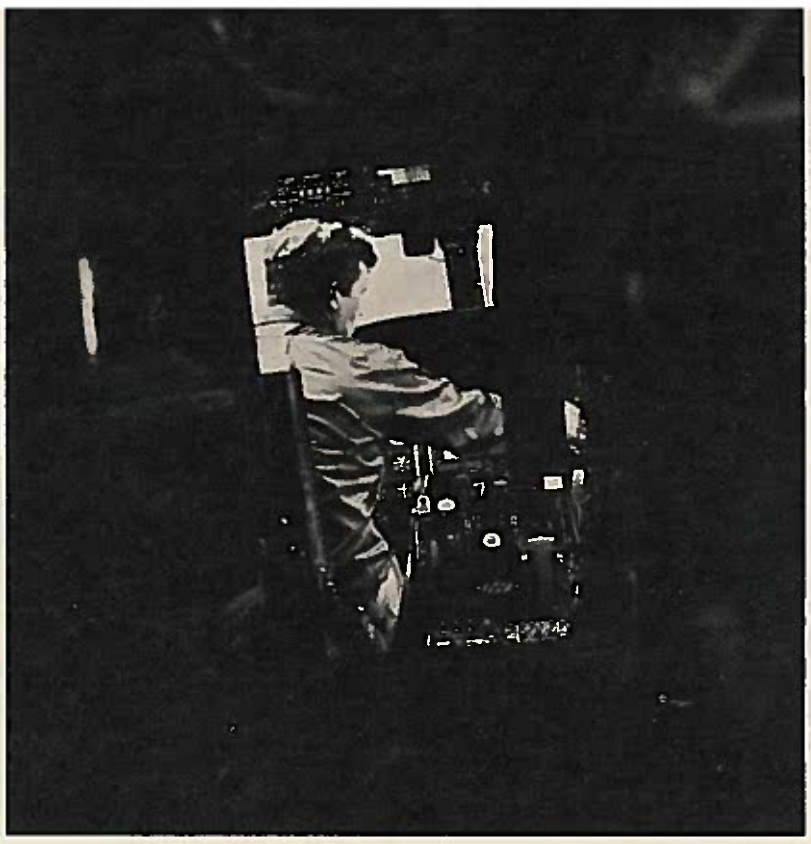
Many of the E-2C teams are well-established, Al Verderosa, program manager, technical, adds, since many of the people working on this aircraft today have been with the E-2 program since its origin in the early 1960s and the development of the first Hawkeye, the E-2A. Subsequently, the E-2B was developed with improved reliability and a modified avionics system. The E-2C, which followed, features the latest generation of avionics, expanded systems capabilities for active and passive detection tracking and navigation accuracies, display and communications, all with high reliability and low maintainability features.

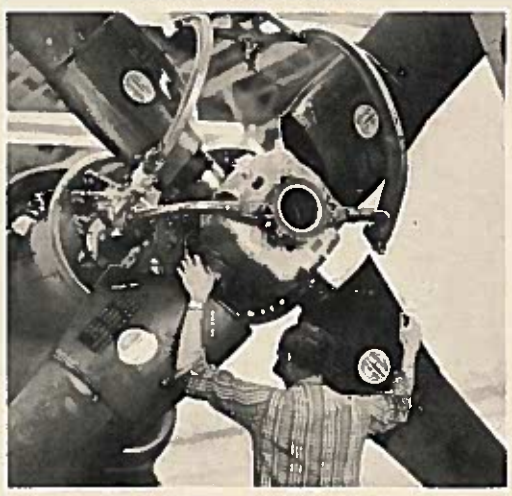
Since its successful first flight in 1971, the E-2C has passed numerous significant milestones, including all varieties of Navy evaluations (such as "fly-before-buy," DSARC, NPEs and the like); various in-flight radar navigation tests; many reliability and maintainability evaluations; and the first successful test flight of a production plane of the E-2C vintage last fall.

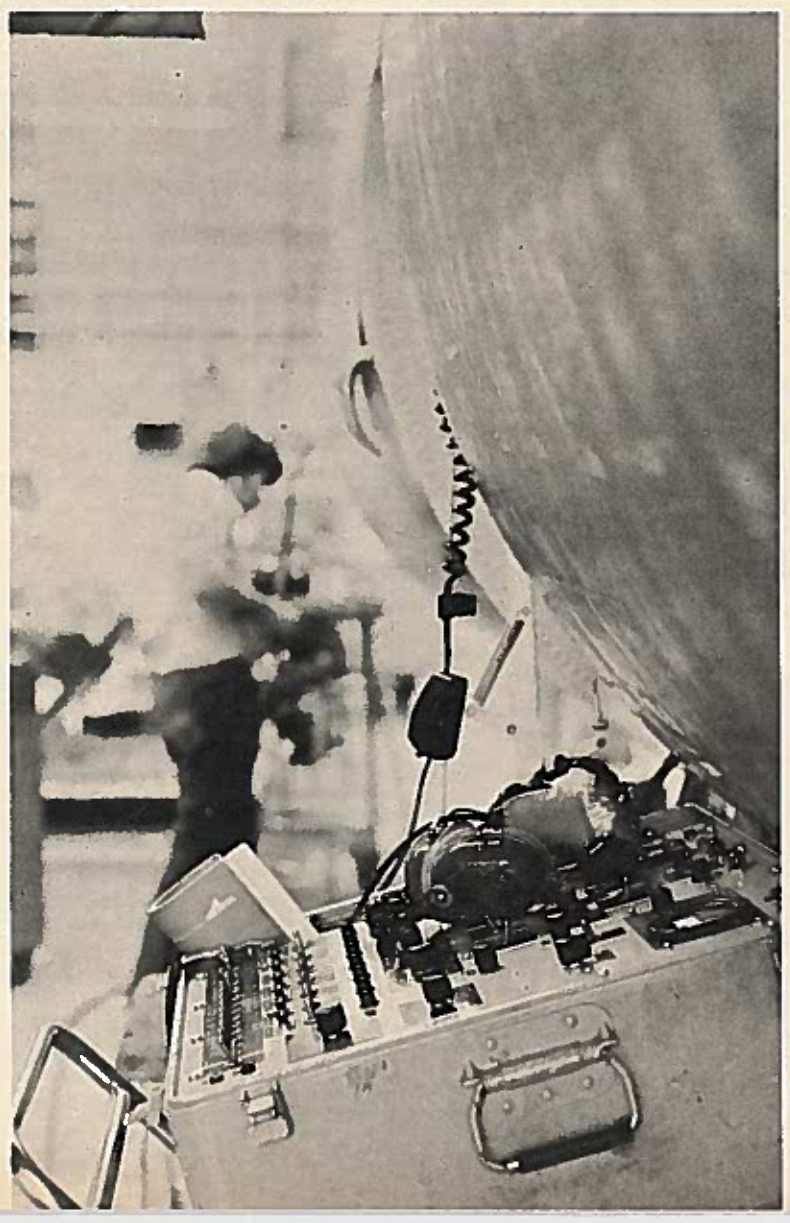
"All told, the E-2C has met a major milestone about every six weeks during its development," Guarino says. "Each step represents a tough evaluation the E-2C must pass before it can move into the next stage. But all of these milestones are only the preliminaries which pave the way for the most crucial evaluation of all, the BIS trials. By this time we have such a high degree of confidence in the aircraft that any modifications that come as a result of the trials will most likely be minor ones."

But BIS trials aren't the only things creating the current stimulating environment centered around the E-2C. Another significant goal is the delivery of the first E-2Cs to fleet squadrons in Norfolk, Va., targeted for June.

People are prepping hard in Plants 4, 14 and 15 these days. And with good reason. They're working long, tedious hours and they're going about it with the kind of dedication and professionalism that can only lead one way: toward success.







Annual gathering of the Bethpage Aircraft Federal Credit Union shareholders was held in the Huntington Town House on March 22. More than 2,300 members, many with their families, were on hand to hear the board of directors report a total income record of $2,489,258 for 1972.

2,300 attend Credit Union Meeting, Dinner on March 22

The Bethpage Aircraft Federal Credit Union held its 31st Annual Shareholders Meeting on March 22 at the Huntington Town House, Huntington Station, N. Y. Approximately 2,300 members were present at the dinner meeting to hear Tom Gill, president of the Board of Directors, report that the Credit Union's total income rose to a record $2,489,258, an increase of more than 15 percent over 1971.

"Although records were also established with respect to net income, assets, shares, and dividend payments," says Gill, "the real measure of success for a credit union is the benefits and services afforded its members."

In the reports given by the directors, Gill noted that the Bethpage Credit Union can be judged "successful." Reasons: the dividend rate of six percent, the maximum permitted by law, was maintained, and for the first time in the history of the Bethpage Credit Union, a partial loan interest refund was declared in each quarter of 1972 at the rates of 10 percent for both of the first two quarters, and 15 percent for each of the second two quarters.

Some highlights of the Board of Directors' report are:

- the introduction of life-insured savings provided at no cost to all eligible members.
- the financial burden of carrying a large loan will be eased by extending the maximum term from three to four years for loans over $2,500.
- loan protection life insurance has been increased from $5,000 to $10,000. This insurance policy automatically pays the loan balance upon the borrower's death.
- the announcement of plans to expand the Credit Union facilities by installing several trailers before the end of June.
- the authorization of passbook loans for all Credit Union members, which means that any Credit Union member, whether or not employed by Grumman, may now borrow up to the full balance in his or her share account.

Paycheck change

Approximately 6,000 employees, primarily engineers and administrative personnel, will be changed from a weekly to a biweekly payroll effective April 14. This means that these employees, all of whom will be notified in advance, will no longer be paid each Thursday but will be paid every other Thursday.

Those employees involved in this change will be notified by their supervisors prior to the issuance of their weekly paychecks on Thursday, April 19.

There will be no weekly paychecks for them on Thursday, April 26. The following Thursday, May 3, a double or biweekly paycheck will be issued to those employees affected to get them "up to date."

Credit Union offers tips on how to use its services

With more than 350 withdrawals and deposits made each day, along with 60 loans processed daily, there is little wonder why the Company and the Bethpage Credit Union are offering policy tips and suggestions on ways to "beat the crowds."

Members should avail themselves of the Credit Union services before or after their workshift or during their lunch periods. To accommodate members, the Credit Union offices will be open from 8 a.m. until 4:45 p.m., Monday through Friday, beginning Monday, April 16.

Here are some crowd-beating hints:

- For quicker service when making withdrawals of $100 or more, call the Credit Union, Ext. 9042, before 10:15 a.m. and ask for a check withdrawal to be made payable to either yourself or to yourself and any other party you designate. Your check will be ready for pick-up after 12:30 p.m. of the same day at the window marked "Pick up your withdrawal checks here" or, if you prefer, the Credit Union will mail it to you.
- To avoid standing in line to make a deposit, there is now a special window for "deposits only." Checks or money orders may be mailed to the Credit Union. Be sure to endorse the check "For deposit only" and indicate your badge or account number under your endorsement.
- If you wish to take out a loan, you can either visit the Credit Union office where an interviewer will assist you, or you can obtain an application form at any Grumman ESO or Field Base administration office and mail it to "Credit Union, Plant 2". If the application is approved, your check will be available within 48 hours.
- Fridays and Mondays are the Credit Union's busiest days. Accordingly, visits after 12:30 p.m. to the Credit Union are recommended to avoid standing in line.
- If you find it necessary to make frequent withdrawals, the Credit Union recommends that you lower your payroll deduction.

The circus is coming

If you've got a hankering to take the kids to the circus better get to your nearest Employee Services Office on the run. You can get tickets for the circus—at a discount—and help a lot of other little children as well.

ESO is offering $4 tickets for $3 to adults, and $3 ones for $2 to children to the Clyde Beatty-Cole Bros. Circus for three dates in June. These tickets are available for Thursday, June 21, Friday, June 22 and Saturday, June 23. The Thursday showing is scheduled for the Suffolk State School in Melville, with the Friday-Saturday dates on the north campus of Hofstra University. Weekday shows begin at 4 and 8 p.m., and the Saturday shows at 2 and 8 p.m.

The Clyde Beatty-cole Bros. Circus is sponsored under the auspices of the Shriner Kismet Temples for the benefit of crippled children.

Industry visit. D. W. Kirk Jackson, director of Placement at Atlanta University, chats with Bobby Yorke, (R) manager employment development, during visit to Bethpage recently. Jackson toured the Company facilities and discussed job possibilities for business administration graduate students at Atlanta University. (Photo by Bob Settles)

Photos by Fred Almeida

New Quarters for Avionics

IN 1971, BEFORE WORK ON THE LUNAR MODULE (LM) in Plant 5 at Bethpage actually moved toward completion, Avionics—the Company's electronic and electrical manufacturing arm which, since 1965, had been housed in Plant 35 in Syosset—was already planning to move into its new quarters.

"We prepared for the change almost a year ahead of the actual move," says Augie Walsky, general manager and director of Avionics. "It was a huge undertaking but we worked out every detail in advance so we wouldn't disrupt our production schedules. As it turned out, we were able to meet all of our end-of-the-year commitments on time—and they were actually about 50 per cent greater than those of the previous year."

The whole move was handled with skill, efficiency and seeming ease. Not only was it accomplished with no interference to Avionics' numerous and demanding production schedules, the operation was also completed three weeks ahead of schedule.

The magnitude of the task can be more clearly appreciated by first taking a look at the logistics. Some examples: nearly 900 people (of Avionics' present total of 1,500 employees) were involved; a stockroom with literally hundreds of thousands of parts had to be moved; hundreds of costly, sensitive manufacturing and testing instruments, some of which perform 600 simultaneous measurements for a single test, had to be repositioned; and literally thousands of miles of electrical wiring and cable (a single F-14 alone requires about 26 miles of wiring) had to be relocated.

(Continued on page 8)

New Quarters for Avionics

(Continued from page 7)

Avionics is a centralized, self-sufficient complex geared for everything from prototypes to full production of Aerospace electrical and electronic equipment. Its diverse capabilities include: cable and harness fabrication; maintenance of a complete inventory of over 200 types of currently used airframe and hook-up wires; automatic and semiautomatic wire processing and sleeving; electrical connection encapsulation techniques; microminiature module technology; printed circuit board assembly; metal manufacturing facilities for electrical assembly tooling and for rapid design change implementation; fabrication of panel and console assemblies; and test facilities and support services for all electrical and electronic components. In addition to Plant 5, Avionics operations are also conducted in Plants 1, 3, 4, 6, 7, 8, 14, 26, and 36, at Grumman's Stuart, Fla., and Houston, Tex., facilities, and by eight subcontractors.

Last year alone, Avionics produced some 33,000 complete assemblies, ranging in size and scope from a single wire connection to a complete assembly containing as many as 5,000 printed circuit boards. All aircraft design changes and alterations generally affect Avionics. The change in the shape of a wing, for instance, may also affect the design route of the wiring inside the wing and work in other areas of the Company may slow down or even halt if Avionics misses a deadline or is unable to complete an assignment.

The move to Plant 5 was done on weekends. Jack McNamara, who heads Facilities Maintenance, coordinated the move with Facilities Engineering by scheduling it by sections or departments. In Avionics' production group, for example, there are seven sections: structural, cable and harness, wire cutting and end-preparation, final assembly, printed circuit assembly and encapsulating, factory test and support, box and panel, and final test. Each department or section, with one exception, was moved separately over a single weekend; the stockroom, however, required two weekends. Parts of the extensive instrumentation group were involved in the move, although the bulk of these activities are spread throughout the Grumman facilities ranging from static-fatigue testing in Plant 5 to actual flight testing at Calverton, Point Mugu and Patuxent River, Md.

Although some remodeling had to be done to accommodate the new tenants, Plant 5, for the most part, required few major alterations. In fact, some specially equipped areas proved ideally adaptable. One example: the EMI (electrical magnetic interference) chamber, a soundproof room used for testing the Orbiting Astronomical Observatory (OAO), now houses Avionics' noisy wire braiding machines.

The square footage of Plants 5 and 33 is about equal but the production floor plans are different. Plant 33 is an open-room-type plant while Plant 5 has walls and partitions to separate the functions.

The move to Plant 5 offers a number of advantages to Avionics. According to Walsky, one apparent one is that, for the first time, the manufacturing engineering section for cable and harness design work is housed under one roof. Another less visible but highly significant advantage is cost savings.

"When you consider all the savings, for such things are lower overhead costs and tighter control through consolidation of some of our functions," says Walsky, "we estimate that this move from Plant 33 to Plant 5 will result in a savings in overhead cost avoidance of approximately $1 million a year."

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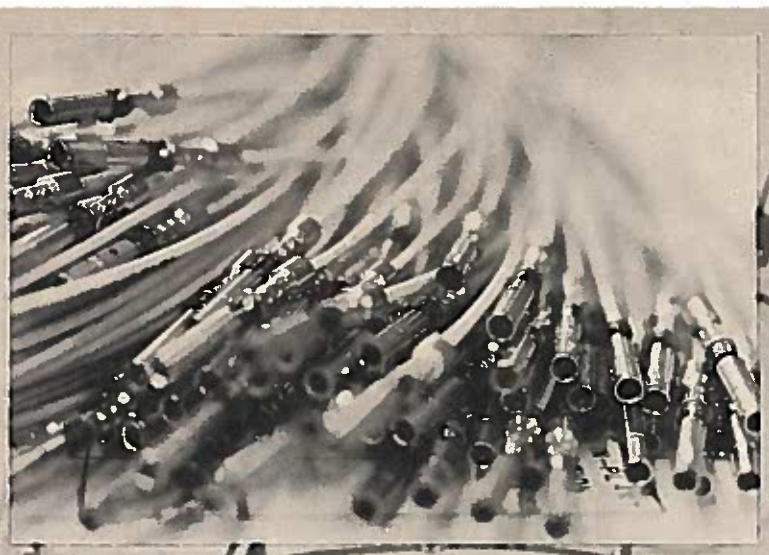


More than 900 Avionics' employees were involved in a move last fall from Plant 33 in Syosset to Plant 5 in Bethpage. Not only was the move completed three weeks ahead of schedule, it was done with no interference to Avionics' production schedules. Moreover, in spite of the move, Avionics met all of its year-end commitments on time.

Helping the Hidden Alcoholic

Photo by Bob Settles

Of all the mind-altering drugs—including hashish, marijuana, cocaine, heroin—alcohol is the most common source of mental or physical damage and death, according to U.S. Bureau of Narcotics. It is an illness, described as such by both the American and British Medical Associations. The National Council on Alcoholism defines an alcoholic as a person who is powerless to stop drinking and whose drinking seriously alters his normal living pattern. The Long Island Council on Alcoholism believes that an alcoholic is any person whose drinking continually interferes with the way he thinks, feels, and acts in any aspect of his life. Alcoholics Anonymous says an alcoholic is any person whose mental or physical condition is so affected by the use of alcohol as to seriously jeopardize normal relations with his or her work, family, or society.

Dr. Robert Jessup, Grumman's Medical Director, combines all three into a working definition: "An alcoholic, as it applies to industry, is a problem drinker; he or she is an individual who has repeated or continual over-indulgences that interfere with efficient performance as it applies to his or her work."

The word "alcoholic" may disturb you. Many people regard alcoholics as "skid-row bums," "swashbucklers," "outcasts", or "social derelicts". There are as many concepts of alcoholism as there are reasons why there are over nine million victims in the U.S. today. An estimated five percent of the U.S. working population are alcoholics. And they cost industry an estimated $2 billion a year.

Look across from you or next to you: alcohol afflicts all sorts of people as impartially as cancer, diabetes or heart disease. Unlike any of these, though, there is only one method of recovery: "Total abstinence is the only answer," says Dr. Jessup.

But where do you begin? Grumman's Personnel Relations Representative Frank Maslak says, "the first and most important step, is to get the alcoholic to acknowledge that he has a drinking problem.

"The Company takes a very practical approach in handling the alcoholism problem," says Maslak. "The employee's job must be affected first and once that occurs, the Company has the right, and the obligation, to get involved. The employee is motivated to seek the available help through 'constructive coercion', that is, if you don't get help, your job could be in jeopardy."

The National Council on Alcoholism has prepared a questionnaire to help determine whether you or a co-worker may need help. Some questions to ask are:

- Do you lose time from work duties because of drinking?
- Do you feel the need of a drink to face certain situations or problems?
- Do people who care for you criticize you? (Such criticism is an important sign because the alcoholic is usually the last person to recognize he is having trouble.)
- Do you occasionally drink heavily after a disappointment, a quarrel, or when the boss gives you a hard time?
- When drinking with other people, do you try to have a few extra drinks when others are not around?
- Are there certain occasions when you feel uncomfortable if alcohol is not available?
- Have you often failed to keep the promise you have made to yourself about controlling or cutting down on your drinking?
- Are you having an increasing number of financial and work problems?
- Do you sometimes have the "shakes" in the morning and find that it helps to have a drink?
- Have you ever tried to control your drinking by changing jobs or moving to a new location?

What's the score? A "yes" to any of these questions may indicate a danger sign and chances are that you have a drinking problem, or may have one in the future. In addition to these symptoms, supervisors are alerted to the danger signs. An alcoholic or a potential alcoholic may have a record of such things as: lunchtime drinking, bleary or red eyes, mood changes after lunch, poor work quality, excessive absenteeism, unusual excuses for absences, loud talking, hand tremors, or avoiding the boss or his associates.

At Grumman, supervisors are usually the first to notice signs of alcoholism in employees. When he can define a problem, a supervisor generally refers the problem-drinker to the Personnel Relations Department where alcoholic problems are handled confidentially.

Personnel Relations doesn't try to handle problem-drinkers singlehandedly, either. The Medical Department helps reach many alcoholics through counseling, supervision and follow-up procedures. Dr. Jessup and Dr. Achille Baldassarri, also with Medical, talk with these employees, feel them out, confront them with the problem, and guide them in seeking medical help.

One source is Freeport Hospital, recognized by the New York State Department of Mental Hygiene as the only hospital in the state certified to treat the alcoholic and his family. The Freeport Treatment Center opened in 1963 to provide services such as family orientation, education, and therapy. The staff includes a psychiatrist, visiting medical specialists, obstetrician, interns, radiologist, laboratory department, and consultation staff. Fifty-four volunteer patients are treated simultaneously for seven day periods. They are treated medically and educated in all aspects of the disease, with particular emphasis on the best methods of treating the illness and the need for continuing treatment through involvement with such programs as Alcoholics Anonymous (AA). Since members of the alcoholic's family are under duress also, they too are involved in the educational process. For example, spouses of alcoholics are participants in a group called "Alanon" while children participate in "Ala-teen."

"Freeport is unique," says Dr. Jessup. "Its referral and educational programs for business and industry prove this. Everyone who holds a position of responsibility to others must realize that to cover up an employee's drinking problem will usually result in the eventual discharge of an unemployable chronic alcoholic."

At Grumman, the value of this type of treatment is recognized. The Company's group insurance plan offers coverage for seven days at Freeport and up to one month for psychiatric treatment in other programs. After the hospitalization treatment, the alcoholic generally needs continuing help which he can receive from a number of sources. Example: L.I.C.A., the Long Island Council on Alcoholism, whose mission is to do the job AA can't do because of its anonymity.

Another source for help is AA which Dr. Jessup describes as the initial and most successful of all agencies. "There's a chapter everywhere in the U.S. and the only requirements are the admission that there is a problem and the desire to stop drinking," he says. There are no dues for AA membership; it is self-supporting through its own contributions. Its purposes are to keep its members sober and help other alcoholics achieve sobriety.

"There is hope for the hidden alcoholic and Grumman is quite willing to be the benefactor," says Dr. Jessup. "There is medical help available, there is psychiatric help, and these agencies help the cured alcoholic remain cured. However, the motivation must come from the employee; he must first admit that he has a problem and that he needs and wants help."

Anyone who would like to make an anonymous or confidential inquiry may contact Personnel Relations Department, Ext. 3521, or Medical, Ext. 2101, for themselves, a family member, friend, or fellow employee.

Mellinger, Cortese spur late rallies in pin action

There are probably a lot of bowlers who wish the season were over—after all, when there is no chance for individual awards or team trophies, and the wrap-up will produce only a couple of bucks in prize money, enthusiasm tends to run dry. That's not the case with Mark Mellinger. Mark exploded for 639 a couple of weeks ago, ticking off games of 258 and 210 along the way, to push the Spoilers to within a half-point of first in the Gray league. In that session, Tom Cava hit 218-201-610 and Nat Kirschbaum fired 205-208-606, and earlier Tony Ferragno registered 606 on lines of 210 and 203.

And in the Rocket league, John Cortese and Paul Havekotte set up strong title charges by their teams with record-breaking performances. Cortese established a 677 mark on lines of 235, 211, and 231 as the Defiant 4 closed in on the Ball Benders, while Havekotte rolled 616 with a record 249 tucked in to push the Hemps into title contention.

Austin clicks 653

Irv Austin, who's been at the sport for awhile, clicked for a 224-236-653 recently to pace Black loop efforts, with Frank Oczko's 225-208-601 and Lee Maggio's 245-594 outstanding, and earlier, Walt Becher reached 642 on 214, 202, 226, and Joe Glasser totaled 600 on 203 and 214. . . . Among the other bright spots in GAA league play were Bob Dudonis, Mike Mustapich, and Frank Catalano. Dudonis scored 228-234-655 Mustapich, 222-228-631; and Catalano, 224-244-650, to headline Classified action.

It ain't over yet in the Masters loop. Dick Spalding kept the Demons on the title trail just in back of the Webs with an 860 four-game set on 231, 234, 213. Other high scorers: Nick Malandro, 789; Don Eivers, 224-230-815; Jake Brouillard, 220-807. . . . But in the Patchogue Mixed circuit, Captain and his Crew have already tied up their yacht, hied to the nearest watering spot, and are ready to hoist a few in celebration of their championship. In recent play, Ken Becker hit 214-605 to keep the Crew paddling, with other notables being Val Lindstrom, 519; Dick Lindstrom, 201-568; John Erickson, 209-569; and Gene Burgess, 564.

They don't laugh when Mickey Rooney gets up to bowl. Not this Mickey at least. And to a lot of people, what he did a couple of weeks ago in the Trader loop wasn't very funny either. Mickey punched out 204-212-597 to keep the Knights atop the league and in good shape to clinch the title. Ken Smith and Frank Nelson scored better—Ken had 212-226-610 and Frank 223-616 recently — but Rooney really had the last laugh.

Rounding out the top league efforts: BLUE MIXED—Fred Annette, 222-591; Joy Olenick, 205; Leslie Coursen, 215-497; OUTPOST—Ed Waesche, 215-582; Bob Foster, 210-609; Roy Moser, 232-581; AEROSPACE—John Schwab, 227-551; Dan Aquilino, 215-586; Joe Aquilino, 203-221-582; HAWKEYE MIXED — Ray Newcombe, 256-606; Edna Jezewski, 208-510; Chet Everoski, 238-593; WOODBURY MIXED—Martha Juppe, 512; John Mayer, 204-579; Joe Glasser, 223-572; Ann Lessmann, 452.

Surrounded by the cops as he goes up for a shot, Jim Cruthers sinks one for the Grumman Hellcats. But to no avail; the Nassau Police won, 77-74 in the Nassau Coliseum exhibition game. (Photo by Bob Settles)

They're at it again . . .

Newcomers champs

The Newcomers made it—three championship years in a row—as they swiped the Digits out of the playoffs in the Thursday basketball league. In the first playoff game, the champs crushed the losers, 77-71. Eddie Krol and Frank Quarto were high scorers with 28 and 23 points respectively, while Billy Foote and Vince Clerico controlled the boards for the winners. John Ebron was high man for the Digits with 24.

In the final game, once again it was Krol and Quarto leading the Newcomers with 32 and 31 points, respectively, as the champions annihilated the challengers, 91-85. Lee Gendron added the extra punch in the final two minutes shooting 6-for-6 at the foul line.

Tomcats hit the road to collect gun honors

The pistol division of the Grumman Rod and Gun Club entered the Connecticut State Championship and walked away with first place in marksmanship. The Grumman Tomcats scored a total of 1,023 with the help of Phil Boehm's 272-5X; Ron Trenkner's 268-3X; Bill Rommell's 243-1X; and Sy Cohen's 240-3X.

In the Marksman Class Civilian competition, Trenkner grabbed first place in four divisions: slow fire, 176; rapid fire, 185-5X; gallery course, 281-4X; and agregate, 829-14X. Trenkner placed second in the timed-fire contest, with 187-5X.

Phil Boehm entered in the Sharpshooter Class, police division and grasped two first place honors by shooting 186-3X in the rapid fire contest and 275-4X in the gallery course.

In the South Shore pistol league, the Grumman Center Fire team lost to Great Cove A, 1,093-1,013. That makes it even at five wins and five losses. The losers were Dave Rice, 274; Boehm, 259; Trenkner, 240; and Greg Criscione, 240.

The Grumman "B" team defeated the Grumman "C", 1,058-1,037, to end the season for the "C" team at 6-4 in the Industrial league. For the winners, Dick Cabble fired a 274; Howard Saltzman shot a 264; and Joe Slattery and Doug Crooks each chipped in with 260 apiece. For the losers, Mike Baumgarten shot 265, followed by Bill Rommell's 259.

The Grumman "E" team lost to Republic, 966-951. This makes a final tally for the season of five wins and five losses. Tom Cassino had high score for the loser with 247.

Grumman 2nd in L.I. Industrial; AMF cops second bowling crown

Going into the final three-game session of the all-men 32nd L.I. Industrial Bowling Tournament, sponsored by Grumman, the second place Grumman team had to close the gap on the first place A.M.F. team by 267 pins. Unfortunately, the Grummanites only managed to narrow the lead to 171 as the A.M.F. team successfully defended its championship.

In the fourth round of the tournament, the Grumman team did achieve high-team game of 1,030 with tallies of 226 by Ed Hilbert, 211 by Buzz Goodman, 203 by John Alston, 196 by Jack Nielsen, and 194 by George Ulrich.

Al Weaver, A.M.F. team captain, was awarded the Outstanding Bowler Award as a result of knocking down 2,361 pins for the 12 games. Weaver, who has been in contention for the award for many years, moved into first place on a 212 game in the next to last game of the event, and hung on to edge Whitey Cerkovnik, the Republic captain, by seven pins.

The final team standings in the 16-squad field were A.M.F., 11,213; Grumman, 11,042; Airborne, 10,966; and Republic, 10,828.

Letters to the editor

To the Editor:

I can not understand why milk purchased in our cafeteria costs twice as much per ounce as milk purchased in a supermarket. Obviously, the difference can't be due to major differentials in labor costs or overhead. If container size makes the difference, why not buy in bulk and serve by the glass? Sixty cents a quart for milk is too much!

Mort Kommel

In response, Dick Kosse, director of Food Services, has provided Plane News with this reply:

The latest price increases in the Grumman cafeterias amounted to an average of 5½ percent. Some items were increased more than 5½ percent, and others not at all. For instance, coffee. So, although the person buying milk might pay a substantial increase, the person buying a variety of items over a period of time would be paying an average 5½ percent increase. As for bulk milk: the majority of milk sales are dispensed through vending machines and milk cannot be dispensed in that way. To have different prices for bulk milk and container milk would seem unfair and unwieldy to me.

Prices were raised for one reason—the cost of food that we purchase has gone up. There has been a suggestion that Grumman cafeterias are "non-profit." That's not exactly true: Grumman underwrites a considerable loss on the Food Services department every year. Grumman has done this so that we can offer good, low-cost meals to employees; but Grumman can no longer afford, particularly in these days, to suffer even greater losses every year.

Comparing the price of a quart of milk in a supermarket with the price of a container in the cafeteria is somewhat like comparing the price of a cup of coffee here and the price of a pound of coffee in a supermarket.

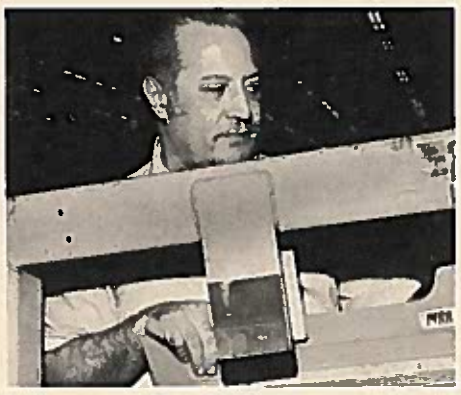
By that comparison, coffee priced at 10 cents a cup in a cafeteria would be priced at $6 a pound in a supermarket. Individual items—coffee for instance—being smaller and necessitating more handling, cannot logically be compared in price to bulk items.

We try in all cases to remain competitive with local eateries—and we are either equal or below them in price.

Jund, Farina are suggestion award winners

The two top idea men selected last month by the Corporate Suggestion Award Committee are John E. Jund and Frank C. Farina. A total of $7,625 in U.S. Savings Bonds was awarded to 54 entrants.

Jund, a leadman in the sub-assembly department at Garden City, suggested revising the F-14 pylon assembly procedure by replacing Hi-Lok fasteners with blind fasteners. This suggestion earned Jund $750 in U. S. Savings Bonds.



Frank Farina

Farina, an assembler-riveter with the F-14 wing assembly department, suggested replacing fasteners used in the swept-wing design of the F-14 aircraft, a job which now requires two men instead of four. Farina was awarded $700 in bonds. He says: "I had already planned a trip to Europe, the first trip in 22 years, but now it will all be a lot easier".

Other award winners were:

$600: Vincent D'Angelo, QC Inspector, Plant 3; Joe Falko, Leadman-Wing Final, Plant 3.

$500: William F. Wolffer, Machinist, Plant 2.

$475: Joseph A. Albanese, Final Assembly Tech., Plant 6.

$450: Paul C. Stein, Sr. Leadman-Elec. Inst., Plant 1.

$375: Joseph Cinquemani, Assembler-riveter, Plant 1.

$250: Frank Hamilton, Process Engr., Plant 2; Adrian N. Hersey, Leadman-Canopy, Plant 1.

$225: James H. Minsky, Electrical Installer, Plant 1; Robert LaManna, leadman, Plant 3; Frank Rule, Assembler-Riveter, Plant 1.

$200: Stanley G. Jastemski, Equip. Repair Mech., Plant 2.

$150: James C. Warner, Assembler-Riveter, Plant 1.

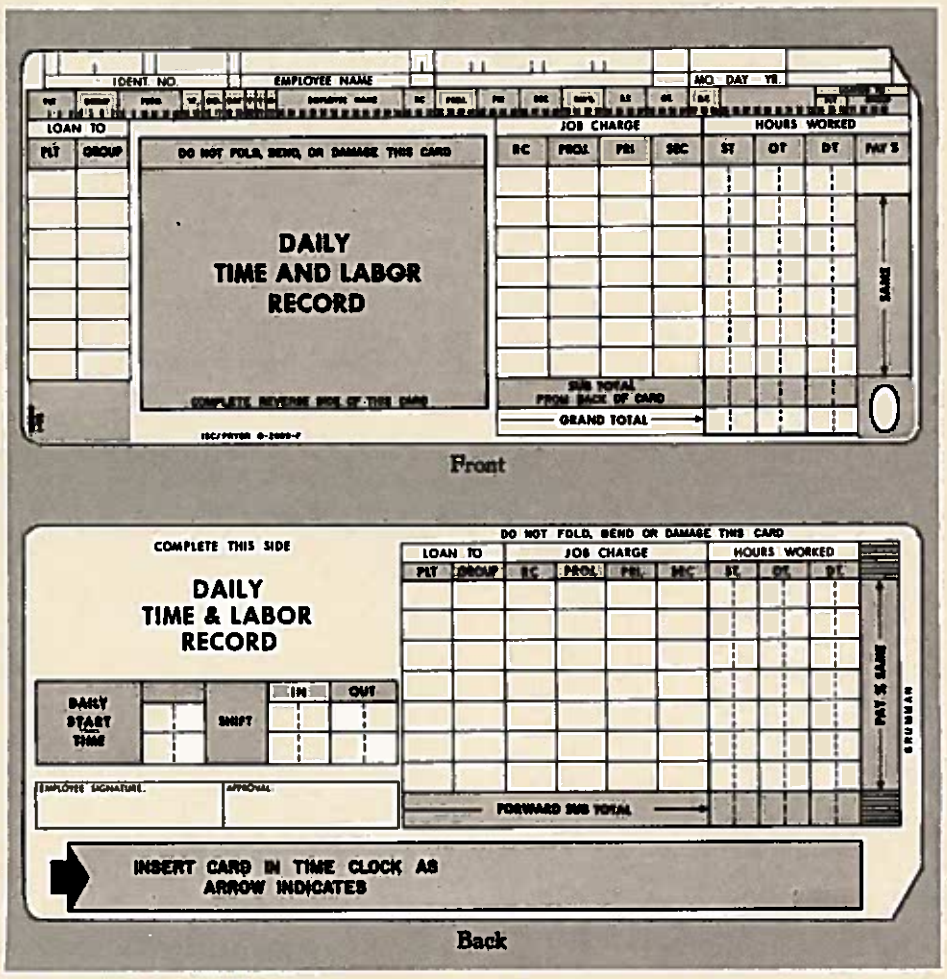
$100: Joseph C. Romano and William Burkhardt, Mechanics, Plant 20; William R. Mytko and Richard Barlow, Ordiance Techs., Plant 1; Steven J. London, Digital Engr., Plant 34; Joseph F. Cinquemani, Assembler-Riveter, Plant 1; Rocco J. Famiglietti, Riveter-Assembler, Plant 1; Alvin G. Beyerlein, Leadman-tank Assembly, Plant 1; Vincent D'Angelo, Inspector, Plant 3; James Kee, Radiographer, Plant 10; Alfred Costari, Sr. Lead Expeditor, Plant 21.

$75: Edward J. Smyth, Ass't. Foreman, Plant 1; Alvin G. Beyerlein, Leadman-Major-Assem., Plant 1; Rocco J. Famiglietti, Assembler-Riveter, Plant 1.

$50: Linda Bookman, Secretary, Plant 5; Douglas N. Bove, Machining Tech Service, Plant 3; Calvin J. Colonel, Inspector, Plant 5; Irving Minsky, Buyer, Plant 30; Gordon Cargill and Ted Zienka, Ditmco Engr., Plant 4; Howard Willing, Leadman-fuselage, Plant 1; George F. Serviss, Keyman-Assembly-Riveter, Plant 1; Curt Siebert, Planner, Plant 30; Anthony Bozzella, Dept. Ass't. Foreman, Plant 2.

C. E.: Wigo Brandt, Buyer, Jack Burt, Supervisor, Walter J. Dunne, Buyer, Plant 30; William Brennan, Buyer, Plant 30; Lawrence Hodgson, Buyer/SCA, Plant 1; John J. Maloney, Buyer, Plant 30; Robert SSison, Project Engr., Plant 35; Thomas G. Piazza, Digital Equip. Engr., Plant 15; Charles Von Holt, Buyer, Plant 1; Richard R. Smith, Buyer/SCA, Plant 1; Jim Murray, Manager, Joe Rosenzveig, Sub-Contractor Admin., Plant 15; Warren Davis, Manager, Plant 15; Joseph Giarraputo, Liason Rep., Ken Riley, Supplier Control Rep., Plant 87; Thomas Maloney, Administrator, Plant 30.

New Daily Timecards



Newly designed timecards to be issued to Aerospace employees

To every season there is a change, and spring marks a change in timecards for all Grumman Aerospace personnel. On April 14, newly designed timecards will be issued to all Aerospace employees, whether they use weekly or daily timecards.

The Corporate Audit and Procedures Department, under Director Howard Dunn, studied the old timecard system primarily through a feasibility study conducted by Systems Analyst Nick Papandreas.

"GAC could not switch everyone to the weekly system because of numerous job charges in some areas," says Papandreas. "But under the new system, approximately 10,000 employees can now be switched from daily to weekly timecards to effect a substantial cost reduction. The new system will also release many secretaries from the nuisance of handing out and collecting the cards daily."

Two-sided cards

The new timecards are quite different from the old ones. Both the weekly and daily cards are two-sided so more job charges can be listed on the front as well as on the back. The old-style card had only one box for "on loan to" job charges, so the department that appeared in the "on loan to" box was charged for the whole week or day, depending on the type of timecard. The redesigned timecards now have an "on loan to" box for each job charge. For example, you can be "on loan to" a department for only one job charge for a half-day on Monday and be on loan to another department for two hours of overtime on Thursday. This new format is more versatile than the old timecards and it also reduces costs for departments that used to bear the charges for other departments for whole weeks or whole days for loan-ins.

Instruction book

All Grumman Aerospace employees will soon receive an instruction booklet which explains the use of the cards. Supervisors have attended question-and-answer training sessions in the use of the cards by the Corporate Audit and Procedures Department.

All timecards are to be prepared in ink and signed by both the employee and the supervisor. "Let's not forget," says Howard Dunn, "that properly prepared timecards is the basis by which Grumman gets paid by its customer. Please make them correct."

On April 14, all new timecards will be issued. In May, 10,000 people who are now on daily timecards will be switched over on a time-phase basis to effect the cost reduction.

The new timecards were designed with the support and assistance of Forms Control and Management, and the GAC Payroll Operations.

For Rent

COTTAGE: Loon Lake, Adirondack Mts., housekeeping, fish., boat., pvt. beach, $65 to $85 per week. 271-5886.

HOUSE: Seatauket, 3 bedrm., 2 bath, ranch, liv. rm., din. rm., full cellar, 2 car gar., beach., appli., ¼ acre, 473-8076.

ROOM: Seaford-Massapequa, lg. room, priv. entr., bath, gentleman pref. SU 1-8750.

HOUSE: Huntington, 3 bedrm. ranch, den w/firepl., centr. a/c, wash.-dryer, avail. 6 months start. April 1. 271-5886.

FURN. ROOMS: Plainview, w/kitch. priv., immed. occup. 938-6999.

APARTMENT: Bethpage, 5 rooms, business people pref., $260/month. OV 1-7845, after 5 p.m.

SHARE HOUSE: Sound Beach, L.I., female, own bedrm., $67/month and util., 744-8051.

HOUSE: Levittown, 4 bedrm., 1½ gar., new appli./bath, singles o.k. 796-9406.

FURNISHED ROOM: nr. Grumman, priv. bath & entr. WE 5-5012 after 6 p.m.

FURNISED ROOM: East Meadow. single or dbl., gar. avail., PE 1-5242.

MOTOR HOME: 24 ft. self-contain., a/c, auto sleeps 6-8 people. 724-0627.

FURN. ROOM: Newly decor., 2 blocks no. of Stewart Ave., Bethpage. WE 5-2055.

APARTMENT: 2½ rm., East Meadow, priv. entr., $190 with util. PE 5-6931.

FURNISHED ROOM: Massapequa, liv. rm. and bedrm., priv. bath, entr., refrig., hot plate, a/c, gentleman pref., $40/week. 798-3595.

COTTAGE: Southold, furn. waterfront, boating, priv. beach on Peconic Bay, July andd/or Aug. 582-3693.

FURNISHED ROOMS: West Islip, furnish., priv. entr./bath, light cooking, own thermostat, JU 7-5238.

HOUSE: Smithtown, unfurn., 3 bedrdms., 2½ baths, firepl., w/w, 2 car gar.. wooded, $335 per month., (805) 982-7851.

Wanted

APARTMENT: Business cpl. nd. 2 bedrm. apt., June or July occup. 938-4966 after 5 p.m.

ROOMMATE: Share Westbury apart., priv. bedrm., liv., sundeck, TV. 201 838-2252.

MOTORBIKE TRAILER: For one or two bike, 500cc wt. 935-4968.

FURNITURE: Old oak din. rm., tbl. chrs., china closet, buffet, etc., set or indiv. pcs. WE 8-6522 anytime.

TRAINS: Lionel or American Flyer. RO 4-7281.

CARRIER: Encl. rooftp., for auto. WE 8-2174 after 6 p.m.

MOTOR: 5 hp for go-cart. SU 1-1924.

MANUAL: For cars, 1963, '64, '65. PE 5-0916.

ANTIQUES: Old furniture, bric-abrac, old dolls, trains. 767-0740.

MANUAL: '64 T-bird. 798-8282.

DESK: For office, wd. or metal. 796-8313.

BOAT PARTS: Searchlight, 6 volt; helmsmans seat, folddown type., port side only. TU 8-5177 after 4:30 p.m.

HOUSE: 4 bedrm., col. or ranch, in Syosset, Plainview, Bethpage, or Locust Grove vicinty. Mid $40's, no brokers please, 212 343-2032.

GUITAR PLAYER: Bass player wants to locate w/ adult group, no rock. 587-4767.

POOL FILTER: Suitable for 24 ft. dia., ⅝ hp or bigger. 724-3808 after 6 p.m.

RADIO: CB, call evgs. 921-2083.

ROULETTE WHEEL: L. Collins, Ext. 84411.

GOLF CLUBS: Good man's set, pref. w/cart. AN 5-4811.

APARTMENT: Two bedrm., no higher than $225., priv. house or garden., Karen, Ext. 9373.

For Adoption

PUPPIES: Mixed breedd, 4 wks. old, male/female. 727-5848.

IRISH SETTER: 8 month old, housebroken, good w/children. WE 5-1115.

KITTENS: Male, 2 blk., 1 tiger, 7 weeks, Commack. 543-5283.

KITTENS: Four, 1 blk/white, female, 3 blacks, male, all w/blue eyes. Five wks. old. MO 5-6262.

KITTENS: 1 male, 2 female, smokey gray, 667-4990.

Ride Wanted

PATCHOGUE: To Pant 5. 3:42 to 12:12 shift, 289-7841.

HICKSVILLE: To Plant 1, 7:30 to 4:00. 822-5805.

Car Pool

MEDFORD: Vicinity of rte. 112, to Plt. 2 hour of 7:30 to 4 p.m. 289-3176.

FLUSHING: Vicinity of 155 st./33 ave., to Plt. 30 or Plt. 15. IN 3-6228.

For Sale

AIR COND.: 6,000 btu casemtn., $100; 6,000 btu window, $65; 864-1549.

MUSTANG: '70 Mach I, p/brks., p/s, a/c, $1,800. 883-2560.

TRAILER: Holiday travel, sleeps 6, bath, shower, oven, gas/elec. refrig., coleman auto-heater. 888-8039.

HOUSE: Amityville, 2 bedrms., colonial, 1½ baths, liv., din. rm., full basement, patio, dbl. gar., $29,-500. 264-0872.

MG: MG Midget, '71, 15,000 mi., gold, am/fm, tonneau cov., boot, $1,695. 249-2232.

For Sale

HOUSE: Hunt. Sta., 8 rms., 4-bdrm., 2½ bath, full bsmt. w/laundry rm. & work shop, all appl. inclu., att. gar., w/w, s/s, ask. $45,000. 549-5650.

HOUSE: Levittown, 3-bdrm., cape, new appl., $27,-900. 735-7603.

FURN.: Fruitwood kit. cab, top & bott. w/full Formica counter, approx. 7 ft. x 7 ft., $350. 826-6272.

OLDS: '67 Delmont 88, all power, 4-dr. sed., $700. After 5 p.m., 669-2587.

FREEZER: Upright 18 cu. ft. United Harvest Queen. "Commercial," $200. 928-1043.

BED: Antique brass, full size, French design, $225. 585-6519.

MISC.: Accordion drs., Nagahyde w/lock, 9 ft. wide x 7 ft. high, $75; (2) 6:00-15 WW tires, $5. 921-8265.

TV: 18 in. color port., 2 yrs., ask. $175. 60 day warranty. 423-3596.

VOLVO: '71 145 S wagon, stan. trans., new tires, $2,675. 929-4784.

HOUSE: Huntington-Elwood, 62 ft. ranch, 3-bdrm., lge. kit., dng. rm., lvg. rm., 20-24 ft. fam. rm., 2 car gar., laund. rm., 1½ bath, full bsmt., approx. ¼ acre, all appl., carpet, drapes, Mid. $40's. 864-1890.

at your SERVICE

This is a free service to Grumman personnel for non-commercial advertisements, accepted on a first-come, first-served basis. Classified advertisements are carried in PLANE NEWS only on the basis that everyone replying to such advertising will receive fair and equal consideration regardless of their race, creed, color, or national origin.

Type or print ad on form available at Employees Service and Engineering counters, and send via interplant mail to PLANE NEWS, Plant 5, Bethpage. List home phone (with area code if outside Nassau or Suffolk). Limit: one ad per person per issue. No item under $10, no firearms or ammunition.

AUSTIN AMERICA: '70, 30,000 mi., auto./manual, w/w, new Pirelli tires and Lucas batt., 25 mpg., R/H, $1,200. 751-0279.

MISC.: Walnut rd. tbl., hex. comode, $40. ea.; Mod. pole lamp/tbl. lamp, $15 ea.; walnut am/fm stereo, phono console with multiplex vg., $85. 226-7238.

HOUSE: Stony Brook North, 12 rm. cedar/brick cust. built ranch, heavy wd. ¾ acre plus, 4 bedrms., 2 baths, din. rm., liv. rm., country kitch., huge pan den w/full kitch., unusual mother-daughter, ask. $59,900. 751-2455.

VW: '69 bug. r/h, $975. 281-4810.

BIKE: Schwinn, boys, Sting Ray pea-pick., five spd., $55. 661-1683.

BABY FURN.: Crib & matt., lt. maple, $15. 785-2143.

TOYOTA: '72 white w/blk. int., am/fm radio, w/rr. spkr, auto. trans., 6,000 mi., 4 dr. $2,400. LI 1-0919.

AMPLIFIER: '71 Fender Bandmaster w/covers, $299. 981-9452, after 6 p.m.

BOAT: 18 ft. w/80 hp. Evinrude Eng., new canv. tp., new start., xtras, will sell separately. $750. 343-6537.

BOAT: 17 ft. Eltro w/33 hp Johnson, elec. start, inc. canv., anchor, etc., $395. JU 1-4093.

OLDS: '64 88, auto, trans., p/s, p/b, one owner, $450. LI 9-1496.

BEER TAPS: Two stainless steel, 4 tap dispens., 3 ft. x 4 ft. x 18 in., lower compartment, insulated for soda or beer, $10 ea. GE 3-3681.

HOUSE: Old Bethpage, 3 bedrm. ranch, brick, 60x100, fin. basemt. w/wet bar, 2 zone hwh, thermopane wds., w/w, lndscpd., d/w, wash., dry., att. gar.. centr. loc., 1 block to shops, $39,500. 694-7255.

IRISH SETTER: Healthy female, spayed, all shots, 1 yr., all papers, champ. blood lines, $100. JU 5-096.3

FORD: '63 Econoline, $100. 298-4697.

HOUSE: Selden, 2-bedr., 4 rms., expand. attic, new oil furn., 100 x 150 fenced lndscpd., 1½ gar, $27,000. 732-5293.

HOUSE: Massapequa, split level, 4-bdrm., 2 bath, eat-in-kit., dng. rm., pan. fam. rm. w/fireplace, gar., fenced yard, $38,900. 691-1630.

TRUCK CAMPER: Franklin, sleeps 6, 4 burner stove/oven, shower, toilet, 4 cu. ft. refrig./freezer, dbl. sink, heater, 30 gal. water w/compress., 12, 110 volt and gas lights, intercom., PY 6-5085.

PROJECTOR: 35 mm Airequipt, $15. GE 3-9449.

CADILLAC: '66 Sedan de Ville, cream w/blk. vinyl, low mil., all power, am radio, climate control, air cond., 4 new tires, 2 snows, orig. owner. 589-6675.

HOUSE: Greenlawn, 3 bdrm., ranch, conv. school, stores trans., $38,000. 271-0224.

BABY EQUIP.: Lullabye crib white spindle, $50; mesh play pen, $15; uphister stroller, $15. 293-8973.

VW FASTBACK: '69, stnd. r/h, low mil., lght. blue, tires w/snows, ask. $1,200. After 5 p.m. 226-4038.

BANJOS: Kimberly, new, $25 ea. 541-3096.

FORD STA. WAGON: '66 country squire, 80,000 mi., orig. owner, 5 new tires, blue ext./int., radio, car rack. 751-6984.

VW: '65, 6 new tires, new batt./brks., ask. $500. TA 6-1425 after 5 p.m.

OLDS: '60 Dynamic 88, 4 dr. sedan, gold, orig. owner, low mi., $300. 433-0364.

RIDING TRACTOR: Sears Suburban 725, recoil start., 3 pt. hitch rotary mower, snow plow, lawn sweeper, bulldozer, and cab, any reasonable offer. 283-9247.

MISC.: Two 375 gal. oil tanks, $20. 822-6514.

TIRES: Snow, two 825x14, ww, tubeless, Chevy rims, Firestone Town/Country, $40. 212 224-2065 before 3 p.m.

TRAIL BIKE: '72 Heathkit, 5 hp, 4 cycle, 2 spd. trans., 850x18 rear tire, up to 30 mph., low mi., $120. LI 1-8590.

PONTIAC: '68 GTO, pwr. brks/steer., auto. trans. WE 5-3097.

PINTO: '72, radio, carpet., 4 spd. trans., white ext. w/tan vinyl int., hi-back buck. seats, $1,750. 212 796-3641, evgs.

DODGE: '65 Polara, V-8, pwr. steer., r/h, $300. JU 1-4814, after 5 p.m.

CORVETTE: '69 conv., ht., 350 4 spd., am/fm radio, cragan wheels, silver gray, 37,000 mi., $2,995. 781-9267.

RIDING TRACTOR: Briggs/Straton eng., 4 wheel drive, 3 ft. snow blade and cultivator attach., $75. GE 3-3681.

DODGE: '67 Dart GT, hdtp., red w/blk. int., buck. seats and console, auto. trans., pwr. steer, new pwr. brks., low mi., $650. 722-3934.

VW: '65, 53 hp., new seats, 4 new tires, bosch screamer kit, oil/temp. gauges, extras. JU 1-3125.

FORD: '69 Galaxie 500, white, 302 eng., new snows, new trans., a/c, auto trans., PY 8-0666.

For Sale

OPEL: '68 1500cc, 4 spd., new brks., and exhaust syst., needs clutch, body good, $350. 277-0443.

FIREBIRD: '70 coupe, formula 400, ram air induct., am/stereo tape, floor console, pwr. disc brks., extras, 35,000 mi., never raced, $2,550. 628-1872, after 6 p.m.

COUGAR: '68, priced to sell fast, nds. valve job. 589-6837.

CAR: Pick-up truck, 8 ft. bed, windows, running lites, $175. JU 1-4817.

PLYMOUTH: '70 GTX 440, auto. trans., pwr. disc brks., p/s, a/c, posi-tract., snows, bronze w/white vinyl tp., white int., $1,795 firm. 486-5752.

MGB/GT: '69, extra tires, $1,250; Fiat 850 hdtp., '70 extra tires/wheels, $1,050. 667-8122.

CAMPER: '70 Apache Mesa III 'solid state' tent, sleeps 6, ice-box, 3 burner stove, propane tank, 12 gal water, sink dinette/cabinets, $1,000. 732-4210.

LAND: 10 acres near Norwich, N. Y., bordering stateland, hunting, $6,000; '68 Firebird conv., auto. trans., r/h, p/s, $985. 744-2204.

MISC.: Desk, metal, gray, Grumman surplus (2), $15; Swimming pool (10x15) compl., used 2 seasons, $60. MY 4-5068.

BEDRM. SET: French prov., fruitwood, twin bed, dress., mirr., nite tbl., desk, chair, $125. 935-2944.

KITCHEN SET: Tbl. w/xtra leaf, neutral gray, formica tp. 4 chairs, chr., $30. JU 1-3125.

ORGAN: Hammond, H100, Cherrywood, 286-8415, after 5 p.m.

FURNITURE: Liv. rm. set, din. rm. set, misc. home furnishings, 543-9019.

PIANO: Mahog. Spinet, $495; Toro Power hand., 21 in. reel mower, 20 in. snowblow., edge and trim att., $150. 661-6180.

MISC.: Mini-refrigerator, 18x18x18, mahg. ext., good for campus, boat. New. $40. Rosemary, Ext. 9444.

FURNITURE: Bedrm., white Ital. prov., twin beds, dress., corner dress., end tbl., mirr., $125. WE 5-9675.

CRIB: Childcraft, w/mattr., $35. OV 1-7891.

BEDRM. SET: 5 pc. blond mod., 2 dress., 1 mirr., 1 nite tbl., 1 dbl. bed frame w/headbd./footbd., $40. 277-9271.

AMPLIFIER: Eico st-70, $90; Two 12 in. spkrs., $50; One Toss 4 trk. cassette, $10. 822-0790.

SAW: Craftsman 10 in. radial arm saw, $100. JU 1-7654.

SANDER: #7421 delux dual-action dustless, Black and Decker, new (in carton), $26, warr., HA 3-3138.

FURNITURE: Modern walnut din. rm. set, 6 chrs., china closet, lg. tbl., 3 leaves, $250. 587-1594, after 6 p.m.

HOUSE: Farmingdale, colon., 3 bedrms., eat-in kitch., form. din. rm., front sun rm., ohw basebd. heat, screened back patio, fin. basemt. rm., detach. gar., nr. trans., school distr. 22, low taxes, $34,500. CH 9-9313.

HOUSE: Bay Shore, 3 bedrm. ranch, gar., fenced, panel. fam. rm., $28,000. JU 6-0182.

HOUSE: Oakdale, 3 bedrm. ranch, den., lg. kitch., 1½ bath, fin. basemt., w/bar, appli., fenced, ask. $35,000. 589-8738.

HOUSE: Massapequa Park, distr. 23, 80x100, 3 bedrm., 21 ft. liv. rm. w/firepl., w/w, att. gar., 15x17 fam. rm. w/bar, 18x26 conc patio, all appli., dishwash., a/c's, low taxes, walk to rr, shops. $39,990. PY 8-4005.

HOUSE: Stony Brook/E. Seatauket, L-shaped hand split cedar shake ranch, 3 bedrms, 2 bath, liv. rm., fam. rm., w/firepl. w/built-in bkcases, din. rm., eat-in kitch., appli., full basemt., part. fin, 1/3 acre, nr Univ. and Mall, low $40's, 751-1182.

HOUSE: West babylon, 3 bedrms., ranch, gar., ½ acre, fin. basemt. 25x26, w/w, s/s, all appli., fenced, walk to school/shops/etc., many extras. $35,500. 661-2794.

MOBILE HOME: 12x55, lg. bed. rm., air cond., skirt, shed, unfurn. patio 10x30. patio awnings. 598-1547.

BUNGALOW: Ferndale, N. Y., 2 bedrm., full bath, kitch., screen. porch., fully furnish., all util., 40x100, priv. lake. PY 6-3887 after 6 p.m.

HOUSE: Massapequa, Nassau Shores, lg. cust. split, all cedar shingle, 3 bedrms., form. din. rm., pan. den, gar., w/w, s/s, oil basebd. heat, appli., extras, $45,900. PY 9-6868.

HOUSE: Dix Hills, 3 bedrm. ranch, full basemt. apartmt. w/priv. entr., school distr. 10, low taxes, two fam. rms., eat-in kitch, din. rm., liv. rm, w/firepl, many xtras. $41,500. 543-7010.

For Sale

PROPERTY: Two lots in So. Hampton, Red Cedar rd./ Lake Drive, lot 158 and 159, $15,000. HA 3-5248.

HOUSE: Babylon. cust. built ranch, gar., 80x100, 3 bedrms., fin. basemt., 2 zone heat, w/w, s/s, 18 ft. above grnd. pool/deck, fenced, ohw heat, low [illegible] MO 9-2892.

HOUSE: Massapequa, cape cod, 3 bedrms., 2 baths, full cellar, oil heat, att. gar., refrig., new rnge. PY 8-6701.

PROPERTY: Delhi, N.Y., riverfront, 15 acre, on Delaware river, approx. 300 ft.. wooded, valley view, walk to golf course, terms avail. $8,500. MO 1-3868 after 6 p.m.

HOUSE: Ranch, eat-in kitch., 3 bedrms., fully carpet., fam. rm., basemt. kitch., appli., treed, fenced., gar., nr. LIE and LIRR, $35,900. 864-5924.

HOUSE: West Babylon, cape-cod, legal mother/ daught., 9 rms., 4 rm. fin. basemt., 2 baths, 3 compl. kitch. w/priv. entr., carpet., gar., lg. shed, lndscpd., fenced, $40,000. MO 1-0355

HOUSE: Westbury, 7 rms., firepl. in liv. rm., den, encl. porch, patio w/built-in barbeque, alum. awning, 1½ gar., s/s, s/s, 2 zone heat, 100 amp serv., taxes $950, immed. occup., no broker, $32,990. 997-8412.

HOUSE: Islip Village, ductch colon., 3 bedrms., lg. liv. w/firepl., form. din. rm., eat-in kitch., gar., walk to shops and LIRR, no brokers, $32,500. JU 1-5326.

HOUSE: No. Babylon, 9 rm. cust. splanch, 8 yrs., nr. shops and schools, 4 bedrms., 2 baths, lg. den, laund. rm., 2 car gar., new in-grnd pool, w/w, drapes, appli., a/c, $45,000. 587-8212.

HOUSE: Islip, so. of Montauk, 2/3 beddrm. ranch, kitch. din., liv. rms., den, indspdd. plot, fenced, gar., on water, 277-1565.

BOAT: 8 ft. "Skimmar," fbgl., sailing pram, '71 4 hp Evinrude, outbd. motor, 261-0671.

BOAT: 16 ft. fbgl. w/built-in '60 40 hp Johnson elec. start eng., canv. tp., '69 sea lion trail., $575. 732-5954.

BOAT: 16 ft. Comet sloop, centerbd. daysailer, 3½ hp Evinrude, mooring, anchor, rubber dinghy, excellent trainer, $295. AN 5-4345.

OUTBD. MOTOR: 7½ hp. Elgin, approx. 25 hrs. running time, best offer. PO 7-3576 after 5 p.m.

BOAT: '69 14 ft. Winner boat/trail., $550. JU 7-7119.

BOAT: Jersey shiff, 28 ft., '66, fly bridge, radio, depth find.. '66 Chrysler, 318 motor, ask. $4,000. 781-7696, after 5 p.m.

BOAT: Lapstrake 16 ft., trailer, 40 hp Mercury outbd., clam rake, pole, and cull box. 589-4856.

BOAT: Cat., 16 ft., twin Johnson 40 hp., elect., '68, $850. PY 8-6103, after 6 p.m.

BOAT: 19 ft. Winner, 120 hp inboard-outbdd., w/ tandem trail. WA 1-5152.

TRAILER: 14 ft. boat, used once, extra ply tires, $125. 586-9441.

BOAT: Klepper Folboat, Aerius II, compl. w/dacron sails, 1 set of paddles, used two weeks on fresh water lake, perfect condition, sell for $480. FI. 4-5550.

SURFBD.: W/roof rack, 9 ft., $25. WE 5-2472.

POOL: 18 ft. dia., Doughboy, steel wall, 2 yr. liner, filter, safety net, safety ladd., $75. WE 5-9675.

CLAMBOAT: 28 ft. garvey, 7 ft. beam, standup cabin steer., 60 hp Evinrude outbd., new paint, $900. MO 5-5010 after 3 p.m.

BOAT: 12 ft. fbgl., fish well, trail, w/tilt bed, 7 hp outbd., remote, gas tank, 2 yrs., $400. CH 9-4007.

BOAT: '67 Glaston Alpha sailbt., 15 ft. fbgl., 100% flotation, lateen rig, red/white hull sails, mahog. daggerbd., pivoting rudder, hiking rails, ask. $400. MA 3-9767.

BOAT: '55 26 ft. Ulrichsen trunk cabin skiff, repower, fall of '70, Flagship V8 eng., CB set, niffer, appro. hd. winter cover, xtras, $2,200. 751-0876 bet. 5-7 p.m.

BOAT: 12 ft. plywd. runabout, homemade utility trail., $100 or swap for infalt. boat, etc., 364-2532.

BOAT: Sailbt. Penguin w/trail. & xtras. $300; Seagull outbd. motor, $100; mooring, $25. HA 7-3979.

CORVETTE: '67 teal blue, conv. w/hdtp., 327 cid 300 hp, 4 spd. stock and mag wheels, $2,400. 822-5406 days.

WAGONEER: '64, 4 wd., r/h, snow plow, new trans., clutch, muff., 56,000 mi. HA 7-5536.

OLDS: '64 conv., r/h, auto., pwr. brks., pwr. steer, orig. owner, $350. 888-8505 after 4 p.m.

STA. WAGON: Marquis '69, all pwr., am/fm, low mi., a/c, vinyl tp., lugg. rack, auto, cruise contr., $2,-175. 379-6149, after 6 p.m.

For Sale

SPRITE: '67, compl. rebuilt eng. (1275cc), new clutch, brakes, muff., roof and uphols., r&h, $725; Blonde mag. dresser w/mirr, chest and nite stands, $95; Auto. TV antenna, new Sony, $12. PY 8-4258.

MERCURY: '71 Marquis, 4 dr. sedan blue, blk. vinyl tp., pwr. steer, pwr. disc brks., a/c w/climate contr., tint glass, 23,500 mi., $2,350. 249-1641, after 5 p.m.

TOYOTA: '68, 2 dr. hdtp., Corona, stick. HA 3-5631.

PICK-UP ATTACH.: '72 8½ ft. side-step truck cargo bed, for Chevy, never used, $125. 724-1551 after 6 p.m.

IMPALA: '68 sedan, 307/eng., green, auto. trans., h/r, $700. 234-0487.

HORNET: '70, 2 dr., 6 cyl., standard, r&h, new snows, $1,050. Call days, 293-0077.

PINTO: '72 orange, w/blk. vinyl tp., (5) A70x13 tires, (2) 700x13 snows w/rims, luxury int., w/ full coutside protect., tach, am/fm, bumper guards, rr. defrost., 2000 cu., 4 spdd., $2,000. 678-2183, after 6 p.m.

SUZUKI: '71 Titan, 500 cc, $675. 681-7872.

HOT DOG TRUCK: Ford walk-in van, fully equipped, $400. 589-0765.

TRIUMPH: '71 Spitfire, white, conv., am/fm, 212 251-0180, after 7 p.m.

VW: '63 bug, eng. diassemb., rebuidable, $50. 269-3545.

TOYOTA: '72 Celica, yellow, Dunlop radials, reclin. buckets, rr. defrost., am/sm, 4 spd., $2,200. PE 1-5752.

VAN: Ford Econoline, 289-V8 eng., buck. seats, tape deck, ansen slotted mags, new belt. tires, 292 cruise gears, $1,350 or best offer. HA 7-0245.

TRAILER: '71 Apache, sleeps 6, heater, stove, dinette, $1,300. MY 4-5814, after 5 p.m.

CALIENTE: '67, 2 dr. hdtp., 59,000 mi., vinyl tp., $500. MO 9-8695.

CHEVY: '68 Suburban Travelall, 6 cyl., 6 pass., 38,000 mi., nds. some work, $1,300. 732-0354.

MISC.: Draft. tbl., 5 ft., never used, Anco mfg. pedestal type, draft. stool, Dazor lamp, 48-inch straight edge, complete set, $75. CH 9-3005, after 7 p.m.

MISC.: 100 lbs. of new alum. elec., indust. kondu boxes, fintings, $75 Stereo console, $35; lg. collect. of cigar bands, stamps, silver coins, make offer. 643-6367.

AIR COMPRESSOR: ½ hp, 100 PSI, 2.8 cfm at 40 psi, 15 ft. hose, output press, regulat., gages, $90. 938-3708.

LADDERS: Sears heavy duty, 24 ft., 32 ft., alum., 13 ft. light duty alum., $85. 868-1389.

LAWN MOWER: AMC 21 in. reel type, 2½ hp Briggs/ Stratton eng., nds. ½ handle, $35. 567-3567.

MISC.: Antiq. smith motor wheel for buckboard or bike, $100. GE 3-3681.

MISC.: Bassinet, walk., car seat, rocker, $25; Metal wardrobe, $25; GE toaster-oven, farb. can open, $15. 472-3899.

MISC.: Trail. hitch for VW, $10; Sears lawn sweeper, 30 in., $20; elec. lawn mower, $10. 472-3899.

DRUMS: Complete set, tom-toms, bass, snare, high-hat, cymbals, wd. block, etc., $175. WE 8-5155, after 5 p.m.

CARRIAGE: Biltrite fold. baby, blue; McGraw Edison crib, walnut grain. 692-8267.

HOUSE CONTENTS: Furniture, books, nicknacks, etc., Commack, 543-9019.

MISC.: Sears port. elec. typewriter, $80; Hospital bed, w/siderails, hosp. hair and interspring mattr., ask. $175. 796-8141 after 7 p.m.

PUPPIES: Collies, akc., champ. lines, sable/white, tri-colors, male and female, eye checks, shots, wormed. 541-7719.

LAWN MOWER: Reel, self-propelled, 21 in., '71, under service contr., $100; Snowblower, lt. weight, Jacobson '72, used one season, $75. 643-3062 after 5 p.m.

MISC.: Lafayette tube tester, $15; Bohn unitrex calculator (mech.), $30. 747-7152.

PONY: Gelding, tack, $80. 289-3176.

LAWNMOWER: Sears, 21 in., self propell., Briggs/ Stratton gas eng., $35. SU 1-5730.

BIKE: Girls Willy-Mae, 20 in., sting-ray, purple, $25. Rosemary, Ext. 9444.

MISC.: Chinese objects, files, storage cab., SCM adder, 8 in. tbl. saw, Burgess sprayer, mahog. anti. china clost., ping-pong tbl., cartop carrier. 742-1906.

MISC.: Scotts Spreader, $11; Briggs/Stratton, 20 in. rotary lawn mower, $40; Auto. dehumidifier, $65. TU 8-5548.

For Sale

ORGAN: Hammond M3 Spinet, w/reverb. unit, $595. 628-8939.

BIKE: Raleigh Chopper, 3 spd., orange w/blk. stripes, $50. 293-1979.

GARAGE DOORS: Two sets of single overhead, wood, etc. hardware, $75. 744-6653.

MISC.: '64 Chevy Impala wagon, 9 pass., pwr. steer., pwr. rr. wndw., $375; Motorcycle, 80cc Yamaha, lugg. rack, helmet, $140; Kent drum set, $130; 20 in. rotary lawn mower, $20; 20 in. bike, $20. CH 9-4884.

LADDER: 24 ft. wood. extension, $12. SU 1-5730.

MISC.: Pine Chest, 36x36x15 in., natural fin., $10; Machinist tools. outside micrometter caliper, test indicator, $20 each. 744-3365.

MISC.: Formica tbl., 4 chrs., $20; 5 light chandelier, brass/walnut, $15. 732-6604.

GUITAR-AMPLIFIER: Gretsch country gentleman, w/ case, Vox Royal guardsman, 2 pc. instrument amp, 60 watts, fuzz, reverb., mid range boost, w/covers and stand, best reasonable offer. 698-6279.

AMPLIFIER: Jordan, 50 watts, for elec. guitar, $20. 249-1641.

CAMERA OUTFIT: Rolleicord, Weston meter, flash, access., $59. WE 8-1869.

EXPOSURE METERS: Sekonic, studio deluxe L28C-2, incid. meter, new, $35; Sekonic, Apex L218, ref. meter, new, $35. 212 923-8509, evgs. only.

AMATEUR RADIO STA.: Hallicrafters SR160 transceiver w/PS-150-120 ac power supply spkr. and PS-150-12DC mobile powr. suppl., $300. 727-6200, evgs.

CAMERA: 35mm, SLR, Pratica fx3 w/auto. 50mm/ 200mm telephoto lens, rt. angle, waist level viewfind., $30. 728-1930.

BOAT PROPELLERS: One Federal left hand 15-11, $20; Columbia rt. hand, 14x7, $15; both for 1 in. shaft. 588-1773.

MISC.: 3 hp Evinrude, long shaft motor, $80; Antiq. oak washstand, $40; VW body trail. hitch, $13. 543-4035.

MISC.: Snowblower, Ariens, 6 hp, heavy duty, $195; Man's suede carcoat, full Alpaca lining, size 44, $60; air. cond.. 6000 btu, 1 yr., $100. 757-2141.

GOLF CLUBS: Used, golf bags, putters. 938-5398, after 5 p.m.

MISC.: Fish tanks, $10; bikes, $10-15; snakehead, $10. 731-5279.

PIANO: Complete rebuilt, upright, deliv. & tuning inclu., $185. 888-7949.

FREEZER: Upright 18 cu. ft., United Harvest "Queen," commercial, $200. 928-1043.

PIANO: Janssen w/bench, maple finish, $500. 473-3089.

EVERGREENS: Azalea, Hemlock, Holly, Rhododendron, etc., reason. RA 8-4914.

MISC.: G.E. refrig/freezer, 16 cu. ft., white, $45; Singer straight stitch w/cabinet, $35; Preway stove, 36 in. white, $50. WE 5-4796.

STEREO: EICO 3070, 70 W. amp, $99; dual 1007 Vi5/ATE-3, $125; Knight KG 796 tuner, $50; 2 OTAH 15 in. speakers w/cab, $50 ea. Evgs. 271-6450.

PUPPIES: Siberian Husky, red-blk, white-Agouti, good temperment, shots, wormed, females, $175-$200. 265-5567.

MISC. FURN.: (Set) three tables mahog. w/walnut inlaid, one 38 in. diameter cocktail w/glass top; one 32 in. square tier table & one step table; two lamps w/shades. 587-0535.

ELECTROLYSIS EQUIP.: Kree machine, lamp, table, needles, lotions, $400 for all. 671-3962.

DUNE BUGGY: '70 Bandito body, remove. hd top, custom curtains, tires, chrome reverse wheels, custom inter, blue/silver, metal flakes, ask. $1300. 681-0377.

TORINO: '71 Brougham, auto trans, a/c, pow. steer, 4 new steel tires, h.d. shocks, 23,000 mi. ask. $2,400. 681-0377.

VW CHASIS: Porsche transaxile, Corvair eng., 4 carbs, full cam, need paint, ask. $1400. 681-0377.

FORD: '70 Galaxie 500, fac. air., front disc pow. brake, radials, snows, auto. trans., pow. steer. 868-4771.

VOLVO: '67, 4-dr, r/h, 4 spd., $850. 757-9033.

VAN: '68 Chevy, 44,000 mi., auto trans, trail hitch, $900. 427-6279.

VOLVO: '69, 2-dr, stick shift, seven w/w, one owner, low mil., r/h, $1300. 757-9262.

CONTNENTAL: '65 Lincoln, new tires, rebuilt trans., leather upholst., $250. After 5 p.m. 371-4311.

MUSTANG: '66 conv., 3 spd. Hurst, all power, customized body, new tires. PR 5-2913.

For Sale

CORVETTE: '61. custom body, whte. diamond tuft int., 390 hp, 427 cu. in, T-10 competition trans., posi rear-bill conversion kit, mags, best offer over $2500. Evgs. AN 5-2155.

VW: '68 Squareback, 57,000 mi., snows, fm stereo-8 track tape deck, new batt, $950. 589-5931.

CYCLE: '69 BSA, 650 cc Lightning twin carbs, tach, 6500 mi., $850. 589-5931.

OLDS: '68 Vista Cruiser, 9 pass., wagon, a/c, low milage, all power, one owner. 289-3831.

BUICK: '61, all power. 732-2059.

BMW 2002: '72, am-fm, rear window defrost, tinted glass, radial tires, low mi., $3500. 248-6523.

CYCLE: '72 Yamaha 250 cc, Enduro, DT-2, lugg. rack, helmet, low mil, extras, $695. 265-6606.

CYCLE: '71 Suzuki, 125 cc, 1200 mi., $400. 289-5545.

HOUSE: W. Farmingdale, 7 rm. brick cape, ½ dormer, fireplace, pan. dng. rm., laundry rm, screened patio, s/s, detached brick gar., o.h., cast iron boiler. 249-0922.

PROPERTY: Businesses plot, 50 ft. x 200 ft., Shirley plan of Tangier sec. A, blk. 44 lot S ½ of 18, $4,990. 938-6140.

HOUSE: Hauppauge, 3 bdrm. ranch, 75 ft. x 175 ft., s/s, w/w, low tax, dead end st., $33,500. firm 265-0143.

HOUSE: Bellmore, young split level, early Amer. decor., 3 bdrm., 1½ bath, fin. bsmt., patio, pool, low tax, extras, low $40's. SU 5-6797.

STARTER: 12 volt for Christ Craft model K or gray Marine 6-cyl. eng. w/left-hand rotation, $25. 541-2835.

BOAT: '68 Revelcraft, 30 ft., sleeps six, full galley, flying bridge, ship-to-shore, depth finder, many ex, $6,900. 265-0332.

ANCHOR: 100 lb. Mushroom, $20. PI 6-2378.

OUTBD.: '72 Sear's, 7 hp., spare gas tank, $150. AT 9-2394.

BOAT: '69 Luhrs 25 ft. fbgls. Sedan Cruiser luxury family cruise of fish, sleeps 4, walk-in-head, full galley, flying bridge, 210 fresh water cool Chrysler eng., full winter cover, depth find, trim tabs, $7,750. Days, (212) 261-6677; Evgs. & Wk. ends, (212) 864-8598.

MISC.: Sears 25 in. color TV, $175; G.E. 15 cu. refrig, $175, Philco Hi Fi, $115; mod. kit set, $175; 7 piece bdrm. set, $225; girls bdrm. set, $175. 698-5441.

CAMERA EQUIP.: Sekoni 10 degree spot meter, $20; Soligor 550135 F3x5 auto. T-4 zoom fit all cameras w/adapt., $85. 212 923-8509 nights.

FURNITURE: One barr. back tapestry chr., $25; One drum tbl., $15. 931-5229.

HOUSE: Massapequa Park, distr. 23, 80x100, 3 bedrm., 21 ft. liv. rm. w/firepl., w/w, att. gar., 15x17 fam. rm. w/bar, 18x26 conc. patio, all appli., dish., a/c's, low taxes, walk to rr./shops, $39,990. PY 8-4005.

GARAGE DOOR: 7x8 ft., overhead wood., compl. w/ hardware, $35. 226-8766.

HOUSE: Huntington Sta., 2 fam. split, self-support., both apts. w/firepl., 2/3 acre, 3 car gar., brick/ plaster, HA 7-0245.

CUTLASS: '67 delux V8, p/s, p/b, auto. trans., new brks., $875. LT 9-1496.

HOUSE: Islip area, Southshore, 10 rm., low ranch, 10x100 corner plot, 24 ft. pool with 6 ft. fence, w/w, panelled rms., efficiency apt. w/priv. entr., $42,000. 581-1264.

BOAT: 14 ft. lapstrake skiff, fbgl. bott., 18 hp. Evinrude motor, tilt trail., steer. contr., access., $450. AN 1-5980 after 5 p.m.

STARTER: Rebuilt for Ford 289/302 cid. eng., $15. 234-6378 after 6 p.m.

AIR COND.: Two Belbuilt casemt. wndw. a/c, $75 ea. OV 1-0360.

POOL TBL.: 2 yr., plastic cover, brush, new balls, chalk, cue sticks, ask $100. CH 9-9359, after 6 pm.

HOUSE: Seiden, 3 bedrms., 1½ baths, panel., den., lg. kitch., half-basemt., lndscpd., extras, $29,500. 732-5954, after 6 p.m.

AMPLIFIER: Bass Ampeg B12xT, 4 Jensen spkrs., tremelo, reverb, dolly and cover, $190. PE 5-1336.

GUITAR: Electric, w/amplifier, $400. 437-0280 after 6 p.m.

JET PUMP: ¾ hp. 82 gal. glass lined tank, make offer. 265-3713.

MISC.: Ital. prov. 6 ft. stereo cab., $125; 3x100 ft. turkey fence wire, $25; 7½ ft. sofa, $50; 4 wd. chairs, $15. 588-6364.

TIRES: Uniroyal studded, snows, L78, 2,000 mi., $60. 938-6140.

For Sale

HOUSE: Bethpage. wide line cape, walk to Plt. 2, lvg. rm w/ broadloom, full dng. rm., fam. rm w/fireplace & wet bar, bsmt., 2½ gar., $45,990. WE 1-4168.

SUZUKI: '70 T-250 II, 2 cyl., 2 cycle, dual exhaust, 6 spd., recent tune up, ex., $435. 921-2959.

MISC.: Four chrome leg padded swivel kit. chairs, $120; Emerson 19 in. B & W, RCA 19 in. B & W, $30 ea., both with VHF & UHF. 928-2743.

HOUSE: E. Northport, Dist. #11, 160 x 100, 3 bdrm, eat-in-kit, sundeck, 20 ft. lvg. rm., full fin. bsmt w/ sep. kit. & ½ bath, ex, $39,990. 864-7590.

STUDEBAKER: '55 Commander, auto. trans., orig. owner, 59,000 mi., $300. 928-2946.

HOUSE: Leg. mother/dght. Brentwood Pines, between No. St. & Expressway, expanded ranch, 3 bdrm, lvg. rm., dng. rm., eat-in-kit, bath, air cond., fin. bsmt., dishwasher, sec, flr., dng. rm., eat-in-kit, lvg. rm., pri. entr., porch. Ask, $38,500. 273-6679.

CAMERA EQUIP.: Pentax 6x7 outfit, camera w/35 mm fisheye, 55mm, 105mm, 150mm, 200 mm, hods, filt., ext. tubes, lens shades, etc., alll w/ case, $2,000 or 60% off list price; Canon, 100mm F2.8 FD, w/case & hood, $105; 20mm f3.8 Vivitar fixed mount for Canon, w/5 yr. warr., $85. 212-923-8509, evgs.

HOUSE: Huntington Station, 2 family, self-supp., 14 rms., 2 fireplaces, 4 baths, 3 car gar., $60,000. HA 7-0245.

TRAILER: Apache tent, w/canopy, w/extra rm., $500. LT 9-2979.

FURNITURE: 2 pc. sectional couch, 2 end tbls., 2 club chrs., 1 cocktail tbl., 1 breakfront, 822-1436.

MOTORCYCLE: '69 Bultaco, 250cc, road/trail, $450. 427-6359, evgs.

VEGA: '72 Hatchback, red, 10,500 mi., w/w, auto. trans., ask. $1,900. 884-6017.

PONTIAC: '64 sta. wagon, Safari, 9 pass., p/s, a/c, $250. 822-6514.

HOUSE: Farmingdale, lg. modern cape, 4 bedrms., 2 baths, mod. eat-in kitch., liv. rm., din. rm., att. gar., appll., w/w, low $40's. MY 4-6343.

LIV. RM. SET: 3 pc. colon. 82 in. upholst. couch, 2 upholst. chrs., $350. 757-0929.

FURNITURE: Blk/white cane pattern couch & chr., chrome end tbl. & etagere, and lamps, $395. 698-5293.

CADILLAC: '68 Fleetwood Broughm, new tires, red leather int., stereo, pearl grey, blk. vinyl top, $2,000. 694-0486. 249-7214.

SPEAKERS: 2 hi-fi Wharfdale W-90, walnut encl., $100 ea. 289-4863.

HOUSE: Bethpage Estates, hi-ranch, 3-5 bdrm., a/c, w/w, s/s, refrig, dish. wash., fenced, patio, fam. rm., laundry rm., prof. land., ¼ acre, $59,000. 938-6140.

OBITUARIES

Plane News has received word that death has come to the Grumman personnel listed below. We extend sincere sympathy to relatives and friends.

JAMES J. JACOBS of Aero Test, Plant 5, died March 21 at the age of 65. He had been with Grumman since 1941 and lived at 2453 Martin Ave., Bellmore.

EDWARD J. GOLBRICK, Inspector-electronics, Plant 5, died March 27 at the age of 62. He had been with Grumman since January 1949, and lived at 253 43rd St., Lindenhurst.

THEODORE PLUMEAU of Instrumentation Planning, Plant 1, died March 31 at the age of 58. He had been with Grumman since May, 1951, and lived at 6 Pelham Drive, Brentwood.

JAMES F. BOLLINGER of maintenance-rearrangement, Plant 6, died April 5 at the age of 56. He had been with Grumman since July, 1965, and lived at 80 Lincoln Ave., Holbrook.

EDWARD G. BRUY of Machine Shops, Plant 2, died April 8 at the age of 64. He had been with Grumman since May, 1954, and lived at 2533 Columbus Ave., N. Bellmore.

For Sale

TRAILER: Avalon Travel, 16 ft., sleeps 6, btl. gas, 3-burner stove, ice box, 4 jacks, spare tire, elec. brks., $1250. 694-2966.

CAMARO: '71 V8, p/s, pwr. disc brks., auto. trans., vinyl top, a/c, extras, $2,700. 751-3512.

SOFA: $1,000 cust. made sofa, plast. cov., lo-ft. long, 2 pcs., hot pink, pecan wood, ask. $450. 751-6830.

BATHROOM: Vanity, 6 ft. dbl. basing, w/matching med. cabinet (mirr.). 692-8437.

SAILBOAT: Blue Jay #3210 wood, dacron sails, w/spinmaker, equip., nds. minor wk., w/trail., $350. 692-8437.

DISHES: Mikasa oven proof, dishwash. proof, everyday, blk/wht., best offer. 928-1709.

HOUSE: Flushing, 2 family frame, 6 rms. plus bath per family, 3 bedrms. per floor, space for park., heat, and utilities. 922-6656.

PONTIAC: '67 Catallina, 2-dr. hdtop., all power, duals, discs, w/w, clock, gauges, blk. vinyl roof, turquoise body, $875. 757-0617.

TAPE DECK: Ross 8 track, 25 assort. tapes, $75. After 5 p.m. 483-9710.

GRINDING MACHINES: Heavy duty, lawn mower parts & extra grinding stones, $450. After 5 p.m. AN 1-0265.

VW: '71 Super Beetle conv., yell/blk. top, blk. int., auto, am/fm, w/w, $1850. After 6 p.m. (212) 441-0106.

CAMPER: '70, VW, sink, table, refrig, sleeps 2 adults & 2 child, $2,000. LT 9-5019.

GAS RANGE: Tappan, 36 in., lge. oven, 7 yrs. old, $55. MY 1-5720.

MISC.: 3 ft. x 100 ft. fence wire, $25; 7½ ft. sofa, $50; 4 wood chrs., $15; 6 ft. Itall. Prov. stereo cab., $125. 588-6364.

MISC.: Color TV 21 in., am/fm Ditono stereo, new picture tube, ask. $350; reclining chair, blk. Naugahide; Ital. Prov., $25. 681-9588.

VW: '70 Bug, new muff., tires & ski rack, $1,175. Evgs. 728-2772

FIAT: '69 850 Spyder, gr, hd. & soft tops, new radials; batt. & brakes, $1050. 261-9149.

TV: Blk. & white. 19 in. Port., Sears, with stand, $35. After 5 p.m. GE 3-3465.

RAMBLER: '63 Classic wagon, V-8, auto, pow. steer, radio & heat, $200. 277-1597.

CAMPER: '72 Bravo, hd. top, sleeps 8 dblle. dinette, stove, sink, ex., $1350. 475-0986.

HOUSE: Hicksville, lge. cape, center halll, pan. bsmt, lge. wet bar, built-in refrig., raised patio, new kool-vent awning, 220 elec., 60 x 120, 2½ gar., $38,000. GE 3-1388.

SEWING MACHINE: Singer, all attach., never used, $250. 928-0967.

CORVETTE: '67 conv., 2 tops, all power, 3 spd. stick, thrush side pipes, new clutch. 744-1514.

FORD: '64, Counry Squire, 9 pass. wagon, $375. 261-0975.

BUICK: 68 LeSabre, 4-dr., hd. top, auto, vinyl roof, 350-2 eng, pow. steer., $900. After 6 p.m. MO 5-3129.

BDRM. SET: 9 piece blond walnut, triple dress, full bed, $150. After 6 p.m. MO 5-3129.

FORD: '68 Galaxy 500, 2-dr. hd top, V-8, all power, auto., vinyl top, snows & rims, $250. 567-0397.

HONDA: '71 CB100 99CC, gold, roll bars, 425 mi, $300. WA 1-0227.

MINI BIKE: Benelli, 50 CC, kick start, head & tail lights, internal expand, brakes, odometer, collapsable handle bars, auto clutch, $90. 938-2837.

CHRYSLER: Crown 6 cyl. marine eng., 1.5 to 1 reduction gear, $150. After 5 p.m. 277-3630.

CADILLAC: '69 Sedan de Ville, 37,000 orig. mi., fac. warr., all power, am/fm, radio, pw. trunk llock & release, tint glass, grey w/white. vinyl, new tires, snows, new disk brakes, $2995. IV 5-1788.

TRAILER: Commanche travel, 18 ft. self-cont., Reese hitch. After 5 p.m. JU 7-0725.

MISC.: Girl's 26 in. Columbia bike, coaster brakes, $25; full size violin, all access., $40. After 5 p.m. MY 4-5091.

HAM GEAR: Heath HW-16, CW transceiver, spkr. crystals, $85. 751-1256.

CADILLAC: '67 Sedan de Ville, low mil., ask. $1800. After 6:30 p.m. 735-8472.

VW ENGINE: '68, 53 hp, compll. rebuilt w/all new parts intall, $225. 273-6239.

HOUSE: Amityville, 2 bedrm., 1½ bath, kit., lvg. & dng. rm., fireplace, dble. gar, full bsmt. deck. $30,500. 264-0872.

IMPALA: '72 Custom, blue, blk. vinyll, a/c, all power, new snows, 350 cu. in. Evgs. 549-9697.

For Sale

TRAINS: HO loco's cars, nickel silver tracks & switchs, 1 dbl., 1 single pwr. pack., bldgs., $160; 1 ironer, $10; humidifier, $60. After 6 p.m. HA 7-1923.

HOUSE: Lake Hopatcong, N.J., 50 x 150, 300 ft. from lake, 4 rms., attic & cellar. After 6 p.m. AN 1-1364.

PLYMOUTH: '70 Duster, V-8, 318 cu. in., auto. trans., all power, r/h, w/w, low mil., 2-dr., bronze/blk. vinyl, $1,700. 888-2029.

FAIRLANE: '68, 2-dr. hd. top, 6 cyll., pwr. steer., 3 spd. trans., 33,000 mi., $850. 935-9235.

MOTORCYCLE: '69 Suzuki, 50 cc, traill, new carb & rings, ex., $150. 661-0483/669-1896.

ORGAN: Fairfisa port. & "Leslie" organ speak, mod. 147, never used, $800. After 5 p.m. 681-7725.

HOUSE: Lake Grove, 3-bdrm., attach. gar., fin.. bsmt., 6 appl., carpeting, fenced, col. decor w/many ex., comfort. dis. from Smithaven Malll. 585-1632.

TV: Magnavox 21 in. blk. & white., early Amer. low boy cabinet, $20. 541-7265.

SAILBOAT: 17 ft. Thistle, molded plywood, dacron sails, nylon spinnaker, dacron cover, 3 hp outbd., ex., $1090. AR 1-3152.

CHEV.: '63 Impala, 4-dr. sedan, V-8, auto. trans. pwr. steer, radio, $200. After 6 p.m. (212) 886-3958.

DINETTE SET: Colonial, 2 captain, 2 mates chairs, $50. 265-7036.

VW: '66 van, rebuilt eng, custom int., $700. WE 5-0434.

WASHING MACHINE: Portable, "Fridgette", washes & spin dries, $60. 888-4669.

TURNTABLE: Lab 80 Garrard, Ask. $45. LY 9-0557.

DNG. RM. SET: Table & 4 chairs, ask. $90. 666-4524.

HOUSE: Commack, 3 bdrm. ranch, w/w, s/s, patio, attach. gar., full bsmt., $35,000. After 6 p.m. 864-3709.

BOAT: '67 Eltro, deep-V-Hull inbd./outbd. eng. & outdrive rebuilt (4 cyl., 153 cu. in., 125 hp.), Telfex steer, teak deck, new controls, open boat w/foldup windshields, winter & summer canvases. After 5 p.m. 666-9781.

POOL: Oval, 10 ft. x 6 ft. x 22 in. deep, '72 Sears, used one season, $15. 587-4728.

CUTLASS: '67 deluxe hd. top, auto. trans, all power, r/h, new brakes, good tires, $875. LT 9-1496.

BOAT: '70 Chrysler "Sport Valiant", 14 ft. fbglls. w/ 45 hp, '70 Chrys. elec. start outbd., 12 v batt. w/ case, controls, elec. bilge pump, navigation lights, fbgls. swivel seat, stor. locker, 2 (6) gal. remote tanks, $1,050. 271-4746.

MISC. FURN.: One barrel back tapestry chair, $25; one drum table, $15. 931-5229.

MISC.: Refrig. 16 cu. ft., $35; gas stove, 30 in., $25; bus. typewriter, $25; 14 in. rims, $10; Mastercraft Sabre saw, $15. After 5 p.m. WE 5-0885.

TRAILER: Cox, sleeps 6, dinette w/sink custom trunk w/spare tire, $540. 437-2997.

PIANO ROLLS: (92) for Duo-Art, by Aeolian Co., recorded before '43, some operettas, Gilb. & &Sull., Gershwin, C. Porter, other classics, call to make offer; Heathkit Mod. IM-17 voltmeter, $12. 757-8535.

CAMERA: Asahi Pentax Spotmatic F 1.4 super Takumar lens, 1/1000 sec. shutter; Yashinon f2.8 50 mm lens and f-3.5 135 mm telephote, 2x adapter lens, lens hoods, tripod. vivitar strobe w/power-supply, carry case, shutter cable, $275. 727-7831.

OLDS: '68 Delmont 88, 455 in, 4-dr, vinyl, all power, $900. 588-1684.

HOUSE: So. Huntington, 2 yr. old custom col., 10 rms., fam. rm w/fireplace, w/w, appl, 2 car gar., nr. pkways and mall, $46,500. 549-5332.

HOUSE: N. Babylon, split ranch, 3-bdrm., fin. playrm w/fireplace & bar, bsmt., 2 car unattach. gar., patio, outdr. brick b-b-q., $29,000. 586-5686.

OUTBD.: '72 Mercury 4 hp., long shaft, f-n-r gears, still under warr., $225. 541-5407.

DOG: Cairn terrier, male, akc reg., all inoculations, house broken, 3½ yrs., good watch dog. 249-8565.

HEADERS: Hooker for 2000cc Pinto $25. 741-0086.

TIRES: Two A78x13 Firestone deluxe cahmp. fbgl. belt., slightly used, $25; new carb. Solex 2 barr., used manifold from Opel 1900 eng., $10. 751-2283.

MISC.: 26 in. boys bike, nds. peddle; two 15 in. rambler wheels; one F78x15 tire; 16 lb. bowl. ball, men's, make offer. 735-5261.

CAMPER: '67 Nimrod, sink, stove, ice-box, dinette, carpet, $250. HA 7-0690.

PONTIAC: '69 2 dr. cust. V-8, auto, p/s, p/b, 37,000 mi., $1,495. 271-0703.

For Sale

MUSTANG: '69, 6 cyl. fastback, auto. trans., new tires, brks., batt., 34,000 mi., $1,095, firm. 212-SH 5-3324, bet. 6-8 p.m.

REFRIGERATOR: Combination refrig.-freezer, capacity 250 lbs., $100. 735-4546.

TRAILER: '70 Cox Tent, sleeps 6, dinette, cab., sink, ice box, elect./water hookup, screen door, spare tire, used four times, $900. 661-0363.

CHEVY: '65 Impala, 4 dr. sedan, V8 eng., p/s, auto. trans., snow tires, 2 spares, blue, orig. owner, $375. 367-4107.

STEREO: Am-fm multiplex tuner, Lafayette LT-325, afc, noise filter, $35. WE 8-4524.

BOAT: 17 ft. '70 cust. built cabin, '70 50 hp Mercury outbd., '70 teene trailer, xtras. $1,600. CH 9-6944.

BOAT: 16 ft. hi-perf. deep vee fiberglass hull shell, $400; with bouyant floor, $575, complete with molded deck, $1,000. LT 9-3203.

HOUSE: Hauppauge, farm ranch, 5 bedrm., 3 full baths, liv. rm., din. rm., lg. kitch, fam. rm. w/ firepl., basemt., 2 car gar, on ½ acre, many extras, $47,500. 234-9178.

CALENDAR of events

Notice of events for the period Apr.25-May 9 should reach Plane News by **Wednesday, April 18.**

Coin Club: Every Wed., 12:05, Plt. 25 Vendor Conf. Room, informal lunchtime meet. Ken Hale, Ext. 1936.

Flying Club: Fri., April 13, 5 p.m., Plant 28, F.A.A. film, guests welcome. Betty Schledorn. Ext. 86827/7372.

Human Factors Society: Tues., April 24, United Cerebral Palsy of N.Y.C. (U.C.P.), 339 E. 44th St., N.Y.C., 6 p.m. dinner; 7:15 p.m. William E. Hughes, Exec. Vice-Pres., Voice Prints Laboratories, and Robert H. Courtney, Manager for Data Security & Privacy, IBM, speakers. Reservations accepted until Fri., April 20. Allan E. Kevin, 575-2701, 9431,2465; after 5:30 p.m., 427-2780.

GAC Divers Club: Wed., April 25, 5 p.m., Plt. 15 buffeteria, anyone interested in scuba or skin diving. J. Roth, Ext. 86411.

Society of Model Railroad Engineers: Tues., April 24, 7:30 p.m., Plt. 28, local, charter meet., employees, families and GAC retirees. Jack Meany, Ext. 7946.

Retiree Club: Wed., April 25, 1:30 p.m., Holiday Manor, reg. month. meet.

Stamp Club: First third Wed. of month, 5 p.m., Plt. 30 cafe., circuit book asales, swap, auction, new members & guests. E. Manaker, Ext. 2324.

Corvair Club: Sun., May 6, Jim McCork, Ext. 2426 for info.

Rod and Gun Club: Wed., April 25, Brandy's, Hazel St., Hicksville, business meet., open to outsiders. J. Crawford, Ext. 2683.

Soccer Club: Practice Wed. 4:30-6:30 p.m., Plt. 3 field; May 12, West Point game, at West Point, spectators welcome. K. Herrnkind, Ext. 3470.

plane GRUMMAN news

Published twice a month for the employees of Grumman Aerospace Corporation, Bethpage, N. Y. 11714, as a function of the Public Affairs Dept., Vice President J. B. Rettaliata, director.

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The WSO: The Essential Partner

(Continued from page 2)

still a good plane. But anything can—and should—be improved. So now we're building the A-6E and modifying the As into Es. And soon there's going to be TRAM (Target Ranging and Acquisition Multi-sensor), a forward-looking infra-red system with a laser that will provide improved tracking and ranging. And again, it's the WSO who'll be responsible for the operation of the weapon system."

Johnson stressed, too, that "Our WSOs are in a unique position to know not only a specific piece of equipment but how each part relates to another. That's the great advantage of Grumman: we're in systems integration, not the building of computers or radars, so we get to look at what the other guy is doing. That way we can select what looks best and suggest modifications of equipment for our uses."

And, like the pilots, the WSOs are engaged in initial design concepts, equipment, training, flight test, and liaison with vendors and customers . . . so that familiarization is in depth.

That familiarization begins when Navy personnel are detached to study maintenance and flight operations under the direction of Grumman or Hughes training people. At first, it's "textbook" oriented; simulators follow; and finally, the WSOs assist in the training of Navy instructors at Point Mugu, Miramar, and Patuxent River. Once done, all subsequent training is in the Navy's hands, though naturally, Grummanites — particularly Product Support people—must be in close liaison with the Fleet.

All through this process, the key point is probably that the Company's test pilots and WSOs, in addition to flying the test points, keep in mind the big questions for the "new" Navy man: Is this going to make it easier for him? Is it clear, so he'll understand what to do? Is it beneficial for him?

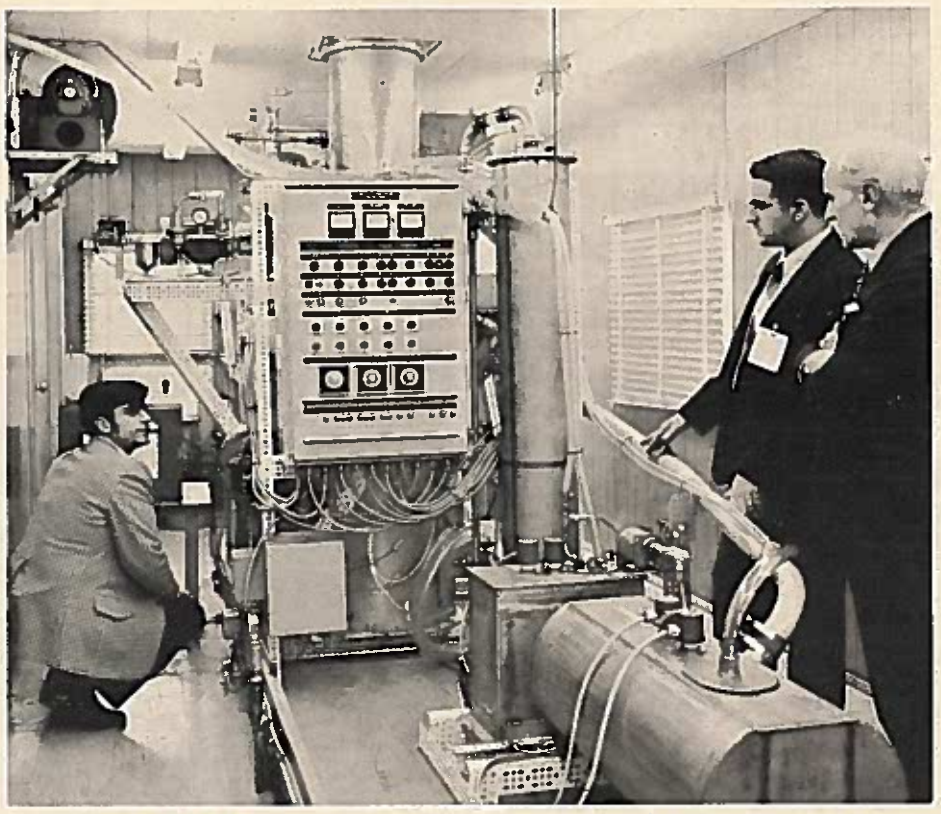
"Everything has to move together smoothly, and a lot of that is up to the WSO," says Sam Ammons, Grumman's Project WSO at Point Mugu, who's been with what he calls "the airborne weapons platform" and has seen how the Tomcat performs. He describes the WSO's role:

"It all depends on the tactical situation, of course, as to which weapon is used — the long-range Phoenix, the medium-range Sparrow, the short-range Sidewinder, or the gun. The pilot makes the choice. The WSO detects the target by radar, acquires it, and then advises the pilot of vectors (directions) to fly in order to position the weapons platform so as to optimize the guidance of the selected weapon. The WSO uses a computerized fire control system to help him to advise the pilot of the altitude, range, speed, and geometry of the target as well as the status of his own weapons platform. A WSO has to have a lot of skill, just as a pilot has to have skill. They are complementary skills . . . and a lot more."

The "lot more" is, as Ferguson put it, "what can't be put in words." How do pilots and WSOs relate closely on a combat mission? What's the chemistry that allows two men (or four, in the case of the EA-6B) to function so well, almost as one?

Probably the key factors are that crew members have a high level of knowledge of their aircraft, its weapon system, and an understanding of each other. And there's something very important—and cannot be put in words: crewmembers must be "professional airmen."

At this stage of human development, there is no answer to the "equation," and there may never be. And until "perfect understanding" is achieved, we can resort only to a hackneyed word, "teamwork." That's what the WSOs and pilots strive to attain.



Shore trials. Coast Guard lieutenants Tom Scarano (L) and Ros Ard, shown here with program manager John Mikals (R), visited Bethpage recently to inspect a shipboard waste-treatment system being developed by Grumman. The operational prototype will undergo three months' of testing at Bethpage before being installed aboard a Coast Guard cutter this summer. (Photo by Fred Annette)

GDS Offering Seminars

Management seminars, at least in recent years, have grown into three-to-four day affairs, with many of them conducted at such well-known "business" sites as Las Vegas, Nevada, and Boca Raton, Florida.

At Grumman Data Systems, however, there are a couple of people who hope to bring some of those management seminars back into the "real" world where bucks are not spent so lavishly, and where business executives don't have to be away more than a day from the home office.

GDS, through its Data Systems Institute, is offering four one-day seminars in upcoming months, with the first—Data Center Security—slated to be held at the de Seversky Conference Center in Old Westbury. Bob Wilk, manager of Technical Security for Grumman Data Systems, is the discussion leader of the first seminar.

Also on the schedule are: May 11—Computer Operations management, Vice President Walter Wood; May 18—Data Processing Efficiency Improvements, Vic Middlebrook of Aerodata (a GDS subsidiary); June 21—Hardware/Software Evaluation Techniques, John Belmont and Martin Blyseth.

And the winner is . . . over 77 percent of all Grummanites participated in the 1973 GAA membership drive and were eligible to win one of 15 Instamatic Pocket Cameras or one of 50 Grumman glasses offered by the GAA. Harry Voiz (R), deputy director of Security and Personnel Services, was on hand to announce the 65 winners. Assisting him are Karen Reeve, Plant 1, and Mike Cherry, GAA. (Photo by Bob Settles.)

GRUMMAN AEROSPACE CORPORATION
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